RAVALLI NATIONAL WILDLIFE REFUGE

Stevensville, Montana

NARRATIVE REPORT 1969

Personnel

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Howard A. Lipke Refuge Manager from 8/24/69

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From 5/5/69 to 8/29/69

U. S. Department of the Interior

Fish and Wildlife Service

Bureau of Sport Fisheries and Wildlife

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RAVALLI NATIONAL WILDLIFE REFUGE

1969

I. GENERAL

A. Weather Conditions

One of the heaviest snow years in some time occurred during the winter of 1968-69. Heavy snows late in 1968 continued into January of the new year with a storm that dumped 8-10 inches of new snow. Total accumulation on some areas was 20 inches. Periodic snow through the month of January accounted for the second highest precipitation total for any month of the year. The 3.35 inches recorded was 2.28 above the normal.

Periodic extreme cold spells were experienced during the winter period with below normal temperatures recorded on 20 days in March. Additional snow fell during March, however, most melted soon afterward. March mountain snow surveys in the valley area remained high with 42 inches (12.80 moisture) reported on Ambrose northeast of Stevensville.

Colder temperatures which were about 11 degrees below the 1968 averages for February and March ended in April with temperatures warmer than usual. Precipitation received in May and June was to represent the majority of summer moisture in 1969. A total of 4.29 inches was reported for June with over two inches received during the last week of the month. This rain was to be the last significant moisture for three months.

July and August weather was warm with an extreme heat wave hitting during the last part of August. Temperatures soared to between 90 and 100 degrees and lasted for well over a week. Precipitation for the two months amounted to only .24 inches and valley conditions generally remained parched until the first of October. During that time the first significant rain in over three months was enough to soak up the ground.

Cold temperatures prevailed throughout October with Missoula reporting the coldest October in $2l_1$ years and four new record lows during midmonth. Temperatures moderated in November and December with periodic cold spells occurring. Cold temperatures from November 16-20 resulted in most pools icing over for the first time and the first valley snow was recorded on the 16th.

November precipitation was very light with only .13 inches at Stevens-ville, and Missoula reporting the driest November since 1954. Mild December weather, highlighted by temperatures in the 50ts during the first week, resulted in a complete lack of snow to start out the new year.

1969	WEATHER	DATA	 STEVENSVILLE	STATION

Temperatures Month: High: Low: Ave.						-:	Precip- itation Totals		Remarks	
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.		62 81 82 89 91 100 90 70		- 6 21 20 32 39 32 25 15		19.2 22.4 30.1 47.9 54.1 59.2 63.2 64.8 55.6 40.1 33.2 26.5		3.35 .58 .14 .68 2.05 4.29 .21 .03 1.16 .43 .13	** ** ** ** ** ** **	Precip. 2.28 above normal Precip42 Precip69 Precip10 Precip. 2.56 above normal Precip. 2.56 above normal72 precip66 precip. Precip24 above normal51 precip97 precip.
	*		:		:		:			

^{*}High and low averages instead of daily temperature.

B. <u>Habitat Conditions</u>

1. Water

Water conditions were generally good throughout 1969. Precipitation and runoff varied considerably during the year but water supplies to the refuge were ample for maintenance of pool levels and irrigation of grassland and cropland. With the completion of two small impoundments in 1969 there are now eight major and lh minor poolsccapable of flooding between 700 and 800 acres.

One of the heaviest snow years occurred during the winter of 1968-69 and the flood threat was high throughout the valley. Fortunately, the spring thaw included a mixture of warm days and cold nights which prevented extensive flooding and damage to dikes and controls.

Water control efforts and resulting pool levels were conducive to both waterfowl production and production of aquatic foods. Irrigation water, although less than usual, was ample for good production of grain crops and improved upland cover.

Most refuge pools rose steadily through April, some cresting during the month of May, others in June. Frost-action and high water on Pool 2 washed out one of the two four-foot half-riser controls and necessitated the only major repair of water control facilities in 1969.

Water levels on the eight major impoundments (1, 2, 3, 4, 5, 6, 8, and 10) and two main diversion pools (Oxbow and Bass Creek) remained relatively stable after reaching their peak elevation. Spring and summer rains had very little effect on levels of refuge pools with only minor fluctuations occurring.

Despite the lack of rain from the first of July through the first of October, pool levels were maintained by ample irrigation water from three Supply Ditch Association supply ditches, and waste and seepage from private-land irrigation. Some water appears along the east river bench as seepage, other waste is collected and conveyed to the refuge in Middle and South Drains and Burnt Fork Creek.

The Bitterroot River provided sufficient water to the Bass Creek Diversion until late July when the ditch was cleaned and a small levee was dozed to divert additional water.

During the fall some pools were raised and/or lowered to increase waterfowl utilization and major fluctuations are recorded for those units. Termination of the irrigation season during the second week of October resulted in the gradual lowering of most major refuge pools. By mid November most were frozen with the only major open water occurring along the main channel of Spring Creek. Pool 8 was lowered considerably to increase the water area for waterfowl wintering on the refuge.

2. Food and Cover

Food and cover conditions were generally good throughout the year. The carry-over of grain crops and upland cover from the 1968 growing season was more than ample for most species utilizing the refuge during the winter of 1968-69. However, deep snows throughout most of January made most cover and 74 acres of standing grain unavailable.

The majority of the refuge deer herd moved to the foothills to escape the 16 to 20 inches of snow present on the valley floor during the early part of the year. The wintering waterfowl population, mostly mallards, also had difficulty since their main winter food supply was covered. Deep snow conditions forced ducks onto corn silage feed lots adjacent to the refuge and resulted in the only depredations complaint of the year. Upland game and song birds were also hard pressed during January.

Although extreme cold temperatures were prevalent through the rest of the winter, ground conditions opened up making cover and food supplies available. Utilization of agricultural lands increased as spring approached.

Nesting and fawning cover conditions were good early in the spring, and new growth of vegetation supplemented early cover for later nesting birds. Emergent brood cover was ample in most refuge pools; however, deficiencies existed in the northern portions of pools 1 through 5. Light growth of

emergents in the newly created pools 8 and 10 was supplemented by flooded brush and timber. Better distribution of emergents in most pools would be desirable and is anticipated as the marshes become better established.

It is felt that 1969 was a better than average berry and seed year based on the productivity of domestic fruits in the valley. Insect numbers, including aquatic invertebrates, were thought to be normal and survival of the young of most bird species was good.

Production of submerged aquatics was excellent in most refuge pools and provided an abundance of late summer and fall food for waterfowl. Pools 2 and 10 were particularly productive with unit 2 receiving the bulk of the pre-hunting season duck use. Pool 10 also received good use of flooded sedge and millet flats around pool margins when the level was increased in November.

Sharecropping on 293 acres of refuge agricultural land resulted in some of the best yields for grain crops since the refuge was established. A total of 43 acres (3480 bu.) of the refuge's one third share was left standing in the fields and 11 acres were harvested for banding and emergency feeding. Early winter use of the grain by waterfowl was light with the first utilization noted in mid December, but deer and pheasant were making heavy use throughout the last three months of the year.

Fall planted winter wheat on 63 acres was receiving good use by Canada geese in December, but light planting rates limited the amount of available browse. Future planning will provide for plantings specifically for goose browse.

Refuge agricultural crops were supplemented by large acreages of grain fields on private land east of the refuge. The relatively open early winter encouraged off-refuge feeding flights, particularly to the dryland farm country in the foothills.

Food and cover conditions at the end of the reporting year were favorable for most resident wildlife species and the wintering waterfowl population. Generally upland cover conditions are excellent with some deficiencies in browse plants for the refuge deer herd.

PART II. WILDLIFE

A. Migratory Birds

Ducks

The wintering population of ducks during the first two and one-half months of the year fluctuated between 1,500 and 3,000 and resulted in fewer use-days than in 1968. Prolonged harsh winter conditions limited winter use until the third week of March when the spring peak of 8,325 was recorded. Even though the peak was comparable to last year, total use-days decreased 24.3%.

The mallard peak of 5,200 was comparable to the previous two years, but use-days were down about 125 thousand from the record of 419,300 in 1968. Spring-period mallard use represented 67.6 percent of the total duck use. Although represented by smaller numbers, canvasbacks and redheads showed the most significant increases in spring use.

By the middle of May the breeding population was stabilized except for the presence of migrating divers, particularly ruddy ducks. Summer duck use was comparable to last year with significant increases noted for widgeon and redheads, and slight decreases for mallards and wood ducks. The 326,340 duck use-days represents a new summer high for the refuge.

Habitat conditions were favorable for the production of ducks, however, a significant decrease occurred in 1969. An estimated 300 breeding pairs produced 1,100 ducks, 62 percent of last year's record of 1,780. Mallards and teal were the primary nesters with 44 percent of the total production by mallards. Even though fewer wood ducks were reported produced in 1969, their contribution was substantial and is expected to increase.

Production of divers showed little change from last year, but expected increases are likely to occur in the near future. Additional development and improved emergent cover in marshes will provide more attractive diver nesting habitat.

Fall duck populations remained relatively stable with a gradual increase until the last week of October. Fall numbers fluctuated after that depending on the weather and hunting pressure. The peak of 4,575 was reported during the fourth week of December and was only 52.1 percent of the record 1968 peak. Two other years in the refuge's five year history had a lower fall peak recorded.

Fall use-days decreased 187 thousand from last year's record of over a half-million. The decrease in use was attributed to the fair weather and abundance of grain in northern feeding areas of Canada. The mallard peak was less than half of the 9,000 present during the first week of December in 1968.

Use was down for most other species also, and significant decreases were reported for green-winged and blue-winged teal, ruddy ducks and canvasbacks. Fall canvasback use was negligible as use-days decreased from almost 3,600 to only 56 in 1969. Only two species, pintails and scaup showed in creases in fall use over 1968.

Use of refuge habitat was good during all periods except late fall. Aquatic plants on refuge pools were the prime source of food well into the fall until duck use shifted to the dryland grain fields in the foothills east of the refuge. Off-refuge feeding flights continued throughout the remainder of the year with some use occurring in refuge grain fields in mid December.

For the third consecutive year annual duck use exceeded one million use-days. The 1,110,830 was the second highest reported, but represented a 21.4 percent decrease from last year. The decrease of over 300 thousand use-days was attributed largely to the harsh weather influence on the wintering population, and the fair weather influence on the fall migration. The year 1969 represented only the second time that the spring peak exceeded the fall peak.

Mallards, teal and widgeon again represented the majority of refuge duck use in 1969. Mallards contributed 60.1 percent of the annual duck use, and widgeon and all species of teal had over 100 thousand use-days each.

Geese

Goose use increased significantly during all reporting periods in 1969. Although the spring peak of 112 Canada geese was only 28 percent of the record peak in 1965, use-days almost equalled that of the record number reported that same year. Between 14 and 53 Canadas stayed during the critical winter period, later peaking during the second week of March. Weather conditions have much to do with the fluctuations that occur in refuge goose numbers during the wintering period.

The breeding population was established by the end of March with the usual non-breeders still present. The estimated 15 potential pairs raised about 50 goslings to flight stage in 1969; however, there is some speculation that some of the broods observed were actually hatched off the refuge. The production represents an increase of almost 68 percent over the previous year's record number.

Staging of Bitterroot Valley geese occurred on the refuge during the last week of August, but mysteriously disappeared afterward. High populations throughout the summer attributed to the almost 7,800 usedays for the period, more than triple that of any previous summer period.

Geese were essentially absent from the refuge until the second week of October when 90 were censused. Small family flocks were sighted during two weeks in the interim period between the August staging and the October arrivals.

Canada goose numbers gradually increased through November, jumped to over 200 the first week of December, and reached a record fall peak of 280 during the fourth week of December. The peak better than doubled the previous record set in mid December of 1968, and use-days were 345 percent of the total for the same period last year.

Use-days for Canada geese totaled 27,363 in 1969 and was almost triple that of previous highs in 1965 and 1968. Mild fall weather, off-refuge hunter pressure, and ample food contributed to the record fall, and total yearly goose use on the area.

The only significant use by other goose species occurred in late March and early April when a flock of snow and Ross' geese stopped on the refuge. The peak of 115 snows and 20 Ross' occurred during the first week of April, contributing to the nearly 2,000 use-days for those species in 1969.

General migrations of snow geese occurred over the refuge during the latter part of October but none stopped. One was reported killed on the refuge, but was undoubtedly a crippled or injured bird.

A single white-fronted goose was observed with Canada geese during the last week and a half of 1969.

Swans

Whistling swan use increased substantially over 1968 and the 2,030 usedays was the highest in the refuge's five year history. Good spring use, highlighted by a peak of 112 during the first week of April, contributed the majority of the use-days.

The first spring migrants arrived during the fourth week of March and a few were still present into the first week of May. The spring peak was short of the record 150 in 1967, but the prolonged use resulted in a record number 1,800 use-days.

The first fall migrant swan was observed on September 28, but not until late October was there any significant migration occurring. High flying flocks were observed at that time and eight birds stopped on the refuge on October 29. The fall peak occurred about a week later when 20 were utilizing Pool 2.

Swans spent considerable time in the open hunting area of the refuge and their almost complete lack of wariness resulted in at least five of the birds shot by "hunters."

Coots

Coot use increased in all but the fall reporting period as a record 389,130 use-days occurred during 1969, a 29 percent increase over last year. The peak of 2,500 occurred during the summer period when 248,500 use-days were recorded. Production was the same as last year when 400 young were produced.

Water and Marsh Birds

The most consistent water bird using the refuge was the great blue heron. Herons winter in the valley and considerable nesting occurs in a colony northwest of the refuge with much time spent feeding or roosting on the refuge.

Four species of grebes were reported (see NR-lA's) with pied-billed and eared grebes nesting on the refuge. An unusually late observation of a single pied-billed was made on December 27. Western grebes were present during a one month period beginning October 10.

Loons are not commonly observed but a single bird was sighted on April 19, spending but a few days on the refuge.

Shorebirds, Gulls and Terms

Details of observations and refuge populations of birds in this category are reported on NR-lA's. Late April marked the arrival of the first shorebirds common to the area with others following in early May. Of the species listed, Wilson's snipe and killdeer were represented during the winter and were the most common refuge nesters. Other abundant spring migrants included Wilson's phalarope which peaked at about 200, and dowitchers numbering about 150.

The fall migration of shorebirds was far from spectacular and the most common species were again snipe and killdeer. Yellowlegs, dowitchers, and sandpipers were present in reduced numbers. A small population of sora rails was present and some refuge production likely occurred from this secretive species.

Only a few observations were reported for gulls and terms on the refuge. Black terms were present late in May and Forster's term, recently added to the refuge bird list, was reported in mid September. Occasional observations of gulls were made during the fall period, but the most unusual sighting was of a ring-billed gull on December 28.

Doves

No substantial changes in the morning dove population occurred during 1969. The first doves were observed on April 22 and by the middle of May the population had built up to its summer level of 150. Considerable nesting occurred but total production was undetermined. The September buildup reached a high of about 200 doves and by the end of October the majority were gone from the area.

A very unusual sighting of 20 doves was made on the December 27 Christmas Bird Count southeast of the refuge.

B. Upland Game Birds

The only resident upland game bird consistently using the refuge is the ring-necked pheasant. Valley and refuge populations have been decreasing annually. Refuge numbers ranged between 50 and 100 birds in 1969 depending on the season.

Excellent cover and food conditions on the refuge probably harbored one of the few moderate-density wild populations in the valley, but even then production was minimum. Only four broods were observed during the summer, mainly in the agricultural areas of the refuge.

The scattered valley population was supplemented prior to the hunting season by releases made by the Montana Fish and Game Department. Normally some are released on the refuge but State personnel feared poor return of birds put in good cover. Early winter conditions have been open and good carry-over of the 50-60 remaining pheasants is expected.

Hungarian (Gray) partridge made periodic use of the east refuge agricultural areas early in the winter. One of the few observations ever made occurred on the east boundary of tract 11 on December 14 when a flock of 13 was counted. Primary habitat for the partridge occurs on the benchland and foothills to the east of the refuge. Unfavorable cover or food conditions will occasionally force the birds down into the valley floor.

C. Big Game

White-tailed deer was the only big game animal that frequented the refuge during the past year. The population was estimated at 25 during the fall and represents a significant increase over the 16 reported in 1968.

Food and cover conditions were good and were reflected in the excellent fawn crop produced. Observations indicated that three sets of twins were raised in the total refuge production of eight. Three beautiful bucks, one five-point and two four-point, were commonly observed in the south refuge area.

Heaviest deer use occurred in tracts 10, 11 and 20 where good distribution of brush, timber and agricultural land attracted the majority of the refuge herd, particularly in the fall. As many as 14 deer were counted along the east bench area adjacent to pools 8 and 10 where they made their daily journeys to refuge grain fields.

No hunter harvest occurred in 1969, but two deer were killed by cars and one by poaching along the East Side Highway east of tract 27.

D. Fur Animals, Predators, Rodents and Other Mammals

Muskrat numbers remain low on refuge marsh areas in spite of favorable habitat conditions. The population is estimated at between 100 and 150, far below desired levels for good marsh management. Major refuge pools, oxbows and seepage areas below dikes harbor the majority of the muskrat population. Their activity in sedge seepage areas and cattail of open pools was very beneficial in opening up dense vegetative monotypes. Muskrat houses could also be very beneficial as goose nesting sites in the future.

No trapping was or will be allowed until the population builds up to desired levels.

Mink were also present in refuge marshes in low numbers. No trapping was permitted in 1969 because of only 40 mink present and the fear of accidental trapping of muskrats. However, this loss may be overshadowed by existing losses of rats as the mink's primary food source.

Beaver activity was noted near the Bass Creek Crossing area and in a marsh/oxbow complex of tract 27. The estimated population of six will remain protected until such time as major water facility problems are anticipated. Some minor plugging of water controls occurred in 1969; however, old and current beaver activity is still providing valuable waterfowl habitat in scattered locations throughout the refuge.

River otter were not observed in 1969 but sign of three animals was spotted in the snow on river overflow channels in the north portion of tract 27. It is felt that otter used the entire river bottom area along the west edge of the refuge at one time or another during the year.

Raccoon numbers remain low but populations are said to be on the increase in the valley. Actual observations of animals were infrequent but tracks left on mud flats and dikes were common. The population probably did not exceed 15-20 animals in 1969.

Striped skunks were the most abundant predator found on the refuge during the past year and removal was undertaken when the opportunity prevailed. About 15 of the refuge population of 60 were killed as potential nest predators.

On December 27, a Dr. Jellison had a study skin of a spotted skunk that was collected somewhere along the eastern foothills of the valley. He noted that it was only the second verified occurrence of the species in this area. None are thought to exist on the refuge.

Red fox numbers were relatively high during the spring period and five refuge dens were disrupted as a predator control measure. The estimated 20 fox that frequent the refuge provide ample opportunity for the visitor to observe the species. Refuge trapping requests have been declined since trapping on the boundaries is sufficient to keep the population at a desirable level.

Rodent numbers were high during the past year as evidenced by the burrowing sign in snow and matted vegetation. Foxes and predatory birds undoubtedly had an ample food supply.

Red squirrel, Columbian ground squirrel, yellow-bellied marmot, badger, and porcupine were all present on the refuge in varying numbers. Population estimates are reported on NR-4. At least two porcupines were removed as problem animals in 1969.

E. Hawks, Eagles, Owls, Crows, Ravens and Magpies

Predatory bird use in 1969 is best explained on NR-lA. The spring migration of hawks showed nothing unusual with marsh, sparrow and red-tailed hawks staying over to nest on the refuge. Rough-legged hawks were observed in each of the three reporting periods but none were thought to nest on the area.

During the fall migration increased numbers of the above species were observed at different times during the period. The only reported observation of a Swainson's hawk was made during the early part of November, and infrequent sightings of Cooper's and pigeon hawks were made in December.

Ospreys periodically visited the refuge throughout the year from their nest sites to the north of the refuge. It is felt that most of the observations were of one or two families that have summered in the valley during previous years.

Eagles, both bald and golden, were signted only during the first four months of the year and a lone golden was again observed late in December. During the winter months the birds move up and down the valley, usually spending considerable time on the refuge waiting for the chance to single out weakened ducks.

Turkey vultures which are generally infrequently sighted in large numbers were well represented in 1969. Three were observed in late May, one late in August and on September 2 a total of seven were seen soaring over the south refuge area.

Owls were more often heard than seen during the year. Great-horned owls nested on the refuge in fair numbers, and short-eared owls were seen most commonly late in the year.

Crow numbers and periods of use changed very little from last year with the maximum population again reaching about 100 during the spring migration. Some nesting occurred on the refuge.

Ravens were observed in the fall as well as in the spring this year. Peak numbers probably never exceeded a dozen birds, and lesser numbers were still making periodic flights over the refuge at the close of the year.

Magpies showed no change in use this year with the peak again reaching a high of 200 in November. Considerable nesting occurred and 40 to 50 nests can easily be found scattered throughout the refuge. Control of these birds as potential duck and pheasant nest predators was discontinued last year; however, predation undoubtedly occurred. The extent of losses can only be speculated.

F. Other Birds

The refuge list of other birds is still growing for this relatively new area and local ornithological groups are doing much to add to the list which already includes 163 species. A total of fifteen new observed species need to be added to the present list, and some major revisions are necessary to the abundance classifications. One of the species, the pigmy nuthatch, was again observed this spring.

No highly unusual concentrations occurred and "other bird" activity was considered normal. Local bird watchers set a new valley record for their spring bird count by sighting 109 different species compared to last year's total of 102. A good share of the species were observed on the refuge. A total of 57 species and 6680 total birds were observed on the group's Christmas Bird Count in December, again the refuge providing the majority of species and numbers.

See the attached list, with new species added, for a complete refuge listing.

BIRDS OF THE RAVALLI NATIONAL WILDLIFE REFUGE



Ravalli National Wildlife Refuge was established in December 1963. Proposed boundaries will encompass about 2,800 acres. The area is located in the intermountain Bitterroot Valley of western Montana near the town of Stevensville.

Elevation of the refuge is approximately 3,300 feet above sea level. It is primarily river bottom land, formerly used for agricultural purposes.

Habitats include timbered patches of third growth ponderosa pine, cottonwood and its brush associates, wet meadows, and marshes, and some upland and agricultural lands. Soils are shallow. Sand and gravel deposits are common. Though the primary responsibility of the refuge is waterfowl management, a wide assortment of other bird life also uses the area. All bird life has consideration in development plans.

Surrounding timbered mountains, brushy and grassland foothills, and the Bitterroot River and its many tributaries, all contribute to the great variety of birds seen on this small refuge at various times. The relatively mild weather of this inland valley affects bird migration through the region.

Initial refuge development not only has attracted waterfowl, but numerous shore birds as well. Additional development will increase this attraction. Large concentrations of birds cannot be expected on a refuge of this size. However, the great and interesting variety of bird life is very rewarding to the visitor. Wood ducks and hooded mergansers nest in the river bottom woodlands; mallards and teal nest in the marsh; assorted warblers and related forms are common in the brush types; mountain bluebirds, rufous hummingbirds, evening grosbeaks, and Lewis' woodpeckers can be viewed in their respective proper habitat and season. The great blue heron is seen commonly and a lucky observer might see a majestic golden eagle or a relatively rare osprey.

The following list contains 163 species. It has been compiled from refuge personnel's observations since the establishment of the refuge, as well as contributed observations of qualified members of the local Stevensville bird watching group. The list is in accordance with the Fifth (1957) A.O.U. Check-list.



UNITED STATES DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE



Season

Abundance

S -	March-May	a	-	abundant
S -	June-August	C	-	common
F -	September-November	u	-	uncommon
W -	December-February	0	-	occasional
		r	00	rare

	S	S	F	W		S	S	F	W
									_
Horned Grebe					0			u	0
Eared Grebe			0		Osprey		0	0	
Western Grebe	r				Prairie Falcon	r			
Pied-billed Grebe					Peregrine Falcon	r			
*Great Blue Heron					Pigeon Hawk			0	
Black-crowned Night Heron					*Sparrow Hawk			C	
American Bittern					*Ruffed Grouse			r	
Whistling Swan	r		r		*Ring-necked Pheasant	u	u	u	u
*Canada Goose		u		u	*Gray Partridge	r	r	r	r
Snow Goose	r		r		*Virginia Rail	0	0	0	
Ross' Goose			r		Sora Rail	r	r	r	
*Mallard		a			*American Coot			a	
*Gadwall	C	C	C	С	*Killdeer	C	C	a	0
Pintail		u			*Common Snipe			C	u
*Green-winged Teal		-	C	0	Spotted Sandpiper		0	0	
*Blue-winged Teal	C	C	С		Solitary Sandpiper	0		0	
*Cinnamon Teal	C	C	С		Greater Yellowlegs			u	
*American Widgeon	C	C	C	С	Lesser Yellowlegs			u	
Shoveler	u		u		Least Sandpiper			0	
*Wood Duck	C	C	C		Long-billed Dowitcher	0		u	
Redhead	0		0		Semipalmated Sandpiper			u	
Ring-necked Duck	r		0			0		u	
Canvasback	r		r		Sanderling			r	
Lesser Scaup	0		0		American Avocet	-		0	
Common Goldeneye	0		0		*Wilson's Phalarope	C	u	u	
Barrow's Goldeneye	r		0		Northern Phalarope			u	
Bufflehead	0	0	0	0	California Gull	0	r	0	
Ruddy Duck			С		Ring-billed Gull	0	r	0	
*Hooded Merganser	0	u	u		Common Tern	r			
*Common Merganser	0	0	0	0	Black Tern	r		0	
Red-breasted Merganser	0	r	0	0	Rock Dove	u	u	u	u
Goshawk	0		0	0	*Mourning Dove	C	0	С	
Sharp-shinned Hawk	0		0	0	*Great Horned Owl	u	u	u	u
Cooper's Hawk	0		0	0	Pygmy Owl	r			
*Red-tailed Hawk	C	C	C	C	Short-eared Owl	0		0	0
Swainson's Hawk	C	0	C		Saw-whet Owl	r			
Rough-legged Hawk	0		0	0	Common Nighthawk	u	u	u	
Ferruginous Hawk	0		0		Vaux's Swift	0	0		
Golden Eagle	0	0	0	0	White-throated Swift	0	0		
Bald Eagle	r	r	r		Broad-tailed Hummingbird	r	r	r	

	S	<u>S</u>	F	W		<u>s</u>	S	F	\overline{M}
*Rufous Hummingbird	0	u	u		*House Sparrow	c	C	С	С
Calliope Hummingbird		r			Bobolink		u		
Belted Kingfisher	0	0	0	0	*Western Meadowlark	a	a	C	0
*Red-shafted Flicker	C	C	C	u	*Yellow-headed Blackbird	u	u	0	
Pileated Woodpecker	0	0	0	0	*Red-winged Blackbird	C	C	C	0
*Lewis' Woodpecker	u	u			*Bullock's Oriole		0		
Yellow-bellied Sapsucker	0	0	0		*Brewer's Blackbird			c	0
*Hairy Woodpecker	u	C	u	u	Brown-headed Cowbird	0	u	u	
*Downy Woodpecker	u	C	u	u	Western Tanager	_	u		
*Eastern Kingbird	u	C			Lazuli Bunting	r			
Western Kingbird	O	0			*Evening Grosbeak		0	0	11
Western Wood Pewee	0	С			Cassin's Finch	u	Ī	0	
Horned Lark	· u		u		Common Redpoll	-			0
*Violet-green Swallow	C	u	u		Pine Siskin	0		0	0
*Tree Swallow	C	c	С		*American Goldfinch		0	0	
*Bank Swallow	u	u	u		Red Crossbill	· ·	0	0	r
*Rough-winged Swallow	C	c			Rufous-sided Towhee	r			•
Cliff Swallow	- 0				Vesper Sparrow	0			
*Barn Swallow		С	C		Lark Sparrow	0			
Steller's Jay		Ĭ	_	0	*Oregon Junco		2.50	C	0
*Black-billed Magpie	C	C	C		Tree Sparrow	0	U		0
Common Rayen	r		0		Chipping Sparrow	_			O
Common Crow	_		c	0	White-crowned Sparrow		0		
Clark's Nutcracker		-		0	Fox Sparrow			0	
*Black-capped Chickadee		11	c		Song Sparrow			0	
Mountain Chickadee			0		Snow Bunting	u	u	0	
*White-breasted Nuthatch			C		Show Builting			0	0
*Red-breasted Nuthatch			u						
Dipper	-			r	The following seven species a				_
*House Wren		0	0		accidental visitors and have				
Long-billed Marsh Wren	0		0		only once or twice:	been ;	red	201	raea
Cathird			0		only once of twice.				
*Robin	C		c	0	Red-necked Grebe				
Varied Thrush	r				Turkey Vulture				
Western Bluebird	r		r		Snowy Owl				
*Mountain Bluebird		u			Turkey				
Townsend's Solitaire	0		r		Black-billed Cuckoo				
Ruby-crowned Kinglet		r	_		Pinyon Jay				
Water Pipit			u		Pine Grosbeak				
Bohemian Waxwing				u					
Cedar Waxwing			-	u	New Species Added				
Northern Shrike	0			0	Blue jay				
*Starling	-		a		White pelican				
Red-eyed Vireo		0			Pygmy nuthatch				
Yellow Warbler		C			Warbling vireo				
Myrtle Warbler			0		Forster's tern				
Audubon's Warbler	0	С	2.2		Bonaparte gull				
MacGillivray's Warbler		0			Western flycatcher				
*Yellowthroat	c				American redstart				
Wilson's Warbler	u u				Dunlin (Red-backed sandpiper)				
WITSOM 9 MAINTEL	U		0		Ferrigenous owl				
Refuge Leaflet 222					House finch				
February 1967				3	Semi-palmated plover				
rebruary 1907				3	Baird's sandpiper Northern waterthrush				
					Savannah sparrow				
					_				

G. Fish

Impounded refuge waters have been extremely productive for fair numbers of brook trout and trophy size brown trout. The majority of the fish were commonly observed below water controls or in pools 4-6, 8 and 10. It is estimated that some of the brown trout may be in the ten pound size class.

As one can understand, these fish are a source of frustration for hunters using the refuge. The Montana Fish and Game office in Missoula has been contacted regarding the netting and transfer of these fish to waters where they may be caught, but very little interest has been shown. Unlimited fishing is not compatible with other refuge priorities.

Whitefish and suckers are also present in some refuge pools and river oxbows, and all of the above mentioned fish plus rainbow and cutthroat trout are present in the Bitterroot River which forms the west boundary of the refuge. The Bitterroot is open to public fishing through access in the southwest portion of the refuge or from the opposite bank of the river.

H. Reptiles and Amphibians

Very little information has been recorded for these species in the past. A future list of species encountered in the field will be maintained.

I. Diseases

No wildlife diseases were encountered on the refuge in 1969 and none were reported in the valley area.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

Buildings

Refuge buildings received normal maintenance required to keep them in good working order, but no major efforts were involved. Significant activities involving buildings included:

Tarring and repair of granaries
Alterations to work center pump and pumphouse
Painting of Q-2 kitchen cupboards, and basement floor
Painting of Q-1 garage doors and trim
Replacement of portion of Q-1 sewer line
Alteration and painting of picnic area outhouses

Considerable planning was involved in the proposed remodeling of Q-2 to add two bedrooms within an adjoining garage. Presently the house is a one bedroom facility.

Equipment

The refuge complement of equipment required the usual amount of minor maintenance; however, these major items are noted:

Radiator repair on TD-14 dozer Overhaul and major repair to D-7 dozer Light motor overhaul on road grader Painting of road grader Rigging of spray tank as firefighting outfit

Water Facilities and Roads

Maintenance activity on six miles of dike, nearly 10 miles of dike access and gravelled road, more than 30 water controls, and over 20 miles of fence and boundary posting demanded considerable effort.

Additional time was required to clean out and maintain irrigation ditches which provide water supplies to 305 acres of cropland and grassland.

Water damage necessitated emergency repairs periodically throughout the year. Major activity included:

Riprapped culvert at Burnt Fork Diversion Riprapped eroded area at Bass Creek Crossing Rebuilt small portion of Pool 6 dike Repair to a portion of Pool 2 dike and re-installation of a 4' culvert New physical development included:

Levee west of Pool 10 for protection from Bitterroot River water Hauling of 3500 yards of fill for rehabilitation of Pool 8 dike 2100 feet (6500 cu. yds.) of dike, and control on Tract 21 pool (Unit 2a)

Low level dike for water spreading in SE Tract 21

About 1,000 feet of dike for east Tract 13 pool

Racks for water control stop-logs

Pumphouse on Spud Cellar Pond for irrigation of 20 acres of cropland

Other

The take-over of tract 27 in the north portion of the refuge completed the last major acquisition for Ravalli. About two and one-half miles of the boundary was fenced and/or posted in 1969, and considerable effort was involved in cleanup activities.

Other fencing activity included the removal of obsolete fence from several older tracts in preparation for a systematic refuge fencing $system_{\bullet}$

B. Plantings

All agricultural plantings in 1969 were made by two cooperative farmers. The cooperators worked a total of 293 acres, planting and/or harvesting 93 acres of barley and 70 acres of wheat, fall planting 63 acres to winter wheat, and fallowing 30 acres.

A 37 acre alfalfa planting on tract 20 was in the second year of a three year cycle in a grain/hay rotation.

Under terms of the cooperative agreements, one third of the grain crop is to be left standing in the fields; however, a total of 11 acres (720 bushels) was harvested in light waterfowl-use areas. The balance of the refuge share was left standing in alternate strips. Yield from the 43 acres was estimated at 3480 bushels with 21 acres of Gaines winter wheat yielding considerably better than the 22 acres of barley. Harvested cooperators share was estimated at 8,630 bushels.

Grain yields were high with some small fields of wheat producing up to 120 bushel per acre. Wheat averaged 100 bushel per acre with barley averaging about 63 bushel. Field grain was not utilized by waterfowl until December 15, but even then use was not heavy.

Deer and pheasant use was excellent throughout the fall and it is expected that remaining grain supplies will be ample for the wintering duck population.

A total of 93 acres of cropland was summer fallowed for weed control with 63 acres planted to winter wheat in the fall. Germination of the plantings was good and some goose use was realized in spite of the light seeding rate and lateness of planting. Fall planting of wheat has been primarily for the seed crop the following summer; however, future plantings are planned specifically for goose browse. Earlier plantings and heavy seeding rates will contribute greatly to fall refuge goose-use since little use is made of grain fields.

High productivity of the refuge agricultural units was attributed to proper fertilization, chemical weed control for annual mustards, and irrigation. A total of 135 acres was either flood or sprinkler irrigated with the balance sub-irrigated from seepage from refuge pools and private land east of the refuge.

No new non-agricultural plantings were made in 1969 but woody cover plantings made in previous years received careful attention. Russian olive, Honeysuckle and Caragan seedlings were planted in four areas for upland game and songbird habitat. Cultivation and watering during the past year helped to further establish the plantings and survival is estimated between 75 and 80 percent.

Additional areas will be planted where irrigation water is available to insure survival.

The only other planting in 1969 involved the seeding of new dikes or levees. Timothy and white-dutch clover was seeded on a relatively small acreage to stabilize slopes. Germination has been poor and attempts are being made to secure drier-site grasses for such purposes.

C. Collections and Receipts

Nothing to report for the year.

D. Control of Vegetation

Most vegetative control during 1969 was by chemical means. Limited mechanical control involved the use of the TD-ll dozer on water cress on about 200 feet of the South Drain.

Sharecroppers used 2, 1-D (PGBEE) at .25 per pound per acre on 163 acres of barley and wheat for mustard and thistle control. Although this light application was 95-100 percent effective for mustards, it did little more than slow the growth of thistles. Use of the chemical on croplands in tracts 10, 11, 19, 20 and 21 had much to do with the near record yields of grain crops.

The County Weed Control Board was contracted to complete the only other chemical spraying on the refuge. About 37 acres of grassland and road and dike berms were sprayed with 2,4-D (DMS) at a rate of about three pounds per acre for knapweed and thistle control. Application on 28 acres of grazing unit G-19 was at the expense of the Forest Service which has a free-use permit for the grazing privileges. Spot treatment of this unit was 50-75 percent effective and has done much to improve cover conditions.

Heavy infestations of thistle occur in scattered patches and on dike and road sides throughout the refuge. The heavy density of stands sprayed in 1969 prevented complete coverage and limited the kill to 60-75 percent on nine acres sprayed. Although thistles provide good wildlife cover increasing control efforts will be necessary to protect adjacent landowners from recurring infestations. The Weed Control Board is new in Ravalli County and the refuge should keep pace with it in it's weed control efforts.

E. Planned Burning

No major controlled burning was undertaken during the year. Burning was limited to the cleanout of irrigation supply ditches, and removal of brush and debris from cleanup activities throughout the refuge.

Future burning is anticipated for encouraging deer and goose browse, and for improving upland nesting cover.

F. Fires

No uncontrolled fires occurred on the refuge in 1969 in spite of an extremely dry three-month period (July-September) in which all burning permits were ceased.

IV. RESOURCE MANAGEMENT

A. Grazing

Six permittees grazed a total of 205 head of stock on the refuge in 1969. Total revenue from the 802 AUM's utilized amounted to \$2,405.37. One permit was a free-use permit issued to the U. S. Forest Service, Stevensville, for grazing up to 14 head of horses and mules used in their operation.

The grazing season started either on the 15th or 24th of May and ended in the middle of October, with the exception of G-25 which ended November 30. Some extensions were granted where AUM allotments were not utilized, and permittee problems existed and forage was available.

Weather conditions were good for forage growth this year and for the most part cover conditions were excellent after the grazing season. Unit 25, grazed by Moody, was cropped too close and some adjustments will be necessary for the next grazing season. Units 10 and 11 (McElhaney) were grazed very light in spite of added use by Hagen's cattle when Unit 12 forage was in short supply. A slight increase in AUM's is anticipated in 10 and 11, but similar cover conditions will be maintained since these units provide valuable nesting habitat adjacent to Pool 10.

Eleven head of horses were grazed on the remaining two smaller units and stocking was well below carrying capacities. The Forest Service has improved forage and cover conditions on the 80 acre unit 19 through limited grazing and chemical weed control. The Service also constructed a new corral at the southern end of the unit to expedite handling of the stock used in their work.

The addition of tract 27 to refuge ownership will make some additional pasture land available; however, significant changes are not anticipated in the overall grazing program. Future development will reduce the total available acreage and some alteration of existing units will be necessary.

B. Haying

Under permit 43-69, farming cooperator Robert McElhaney harvested 94 tons of alfalfa hay from Tract 20. Two cuttings were taken from the 37 acre field which is in its second year of a three year cycle in an alfalfa/grain rotation.

The unit is flood irrigated and provides little wildlife value due to the flooding and cutting scheduling. Alfalfa may be replace in refuge rotations by fall planted green-browse seedings which will provide for early fall goose-use and still serve as a green-manure crop.

Total revenue from the 93.98 tons of hay amounted to \$563.88.

C. Fur Harvest

Low muskrat and mink populations did not justify trapping in 1969. Other furbearers are present in limited numbers and will be protected for their esthetic values.

D. Timber Removal

No commercial timber was removed in 1969. Most of the remaining timber will be maintained for environmental education and esthetic reasons.

Free use permits continue to be issued for the removal of firewood from waste trees cut down in the refuge development and maintenance program.

E. Commercial Fishing

None.

F. Other Uses

An apiary operated by Walter Morris (Permit 37-69) was located on the south boundary of the refuge. Total revenue from the 50 hives was \$12.50. The apiary may have to be relocated due to conflict with an adjoining neighbor to the south.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report

Progress reports for refuge biological work are reported below by activity.

B. Banding

After a highly successful post-season mallard banding effort in 1968, trapping success dropped drastically in 1969. Winter banding was attempted from the middle of January through the middle of March with only 231 mallards, 5 pintail and 1 green-winged teal banded. A one-month effort the previous year yielded 735 mallards.

All trapping was done with baited, funnel traps with the best success occurring on Pool 8. This unit provides the majority of open water for the wintering mallard population on the refuge.

Summary for Initial Post-Season Banding at Ravalli

	1968	1969	No. Recoveries
Mallard	735	231	59
Pintail	9	5	0
Shoveler	1	0	0
Widgeon	1	0	0
Green-winged teal	0	1	0
Totals	746	237	59

Early recovery information indicates a Montana harvest (86.4% of recoveries), and that the majority of wintering mallards are harvested in the Bitterroot Valley, particularly in the area of the refuge. Of the 59 recoveries received to date 42 (71.2%) are from the Bitterroot Valley, 35 (59.3%) are from the area of the refuge. Five recoveries have been from the Province of Alberta, two from Idaho, and one from Washington.

C. Wood Duck Nest Boxes

Nineteen additional wooden wood duck boxes were constructed and placed in refuge marshes in early April bringing the total on the area to between 50 and 60. Checks for use have been made at random since 1966 when the project was first begun, and show that some use occurred each year.

Annual maintenance is vital to a nest box program and future checks and servicing will be undertaken during the late winter months. Earlier spot checks of boxes have shown that at least two were used in 1969. Relocation of some will be necessary, but no new boxes will be installed until usage justifies it.

D. Artificial Nesting Sites for Geese

Three distinctly different types of artificial nesting sites have been constructed or erected in refuge marsh areas. Seven major pools (1-6 and 10) have 7080 earthen islands constructed in them. The Pool 10 area is saturated with nest platforms in the tops of trees, some of wire construction and some wash-tubs. In addition, a few nest platforms on legs have been placed over the water in Pool 8.

Previous checks for usage have not been well documented, but there are indications that some of each type were used in 1969. Checks later this winter will show the extent of use.

Earthen nesting islands probably have received the greatest use. For the most part, the islands are located in open water areas of the major refuge pools. Wave action has eroded some of them down but the pools are still saturated with suitable nest sites. "Extra" islands are utilized by loafing ganders, or by ducks. Tires and nest material placed on the islands may have contributed to the use by several pairs in 1969.

A total of 30 platforms have been placed in the tops of trees to simulate osprey nests which are often used by Bitterroot Valley geese. The structures are difficult to maintain or check for usage due to their precarious locations. No verified use has been recorded; however, one off-refuge observer reported seeing down blowing from one of the platforms in 1969.

Frequently geese have been observed using the platforms as loafing sites. These structures will be discontinued in the future because of maintenance difficulty and good acceptance of the other two types of sites on trial.

Of the three nest platforms located over the water on Pool 8, one was used and successfully hatched a brood of geese in 1969. This type of structure is readily maintained and further testing should indicate its potential for future use at Ravalli.

VI. PUBLIC RELATIONS

A. Recreational Uses

The 1969 summary of recreational uses, Table I, has been taken from the monthly Recreational Use Reports for the past year.

Total refuge visits decreased slightly from 1968, but some duplication was eliminated by recognizing visitors on the refuge for more than one activity. It is felt that the 15,687 visits reported in 1969 were comparable to the public use during the previous year.

By far the most important recreational use activity, both in values obtained and in numbers of visitors, was wildlife observation and tour route activity which included use of the three contact stations. Although no specific tour route has been established, excellent opportunities existed for the above activities on three miles of county road. The gravelled road passes by major refuge development and land use activities, and has three contact stations along the right of way which describe area history.

Many of the other recreational activities were related to wildlife observation and were also of great value in contributing to wildlife experiences. The picnic area and river access with six tables and restroom facilities attracted over 1000 visitors. Limited horseback riding and camping were also wildlife related.

Fishing activity decreased significantly in 1969 but 410 visits were still recorded. Access to the Bitterroot River was provided through the picnic area in the southwest corner of the refuge. Trout and whitefish are the species sought on the river which forms the west boundary of the refuge.

Refuge hunting activity was moderate considering the closeness of a relatively high population of people. The 1412 hunter visits reported during the past year represents a slight increase over 1968. About 640 acres (24 percent of the refuge) were open for waterfowl, pheasant and archery deer hunting. Details of hunting activity are included in Section VI, D.

School and organized adult and youth groups were entertained on tours of the refuge, particularly during the spring months when bird activity was at its peak. Although these activities are educational in nature, they still provide a certain amount of recreation to the participants. Particulars on the extent of this activity are described in detail in Section VI, C.

Public awareness of the existence and objectives of Ravalli Refuge is growing and more and more people are expected to visit the area for a wildlife experience in the future. Planning and control are essential to insure that recreational activities are wildlife orientated, particularly on a small area such as Ravalli.

B. Refuge Visitors

A total of 77 visitors was recorded in a bound office ledger in 1969, 38 of which were official visits. Twenty-six official government visits are listed, seven by Montana Fish and Game personnel. Others included, ten by Montana University personnel regarding refuge studies, and two by individuals of the news media.

Some entries have undoubtedly been left out but the register is fairly complete for official visitors. Reported recreational visits and visits by permittees represents only a partial list of those stopping at the office. Also, since the refuge office is located in the town of Stevensville the majority of such visits go unnoticed and are not recorded. An on-refuge office facility is very much needed to properly serve the public and administer the area.

C. Refuge Participation

During the year 33 organized groups with a total of 1020 people were accommodated on tours, talks, wildlife management lectures, and film and slide showings. In addition, six meetings of interest to the Bureau were attended.

Spring, as in most years, was the peak for tour group activity since bird activity was also at its peak. The majority of the tours were for school groups with active ornithological groups accommodated on several occasions.

A new carousel slide projector and screen was purchased late in the fall and future slide showings are expected to contribute greatly to the refuge public information and education program. Until a station slide collection is established, showings will be from the manager's personal collection.

During the last four months of 1969, refuge participation activities were recorded in a bound office ledger which will eliminate future narrative listing. The following breakdown is provided:

Summary of Activity

Activity	Number	<u>Participants</u>
Tours: School groups Organized (youth) Ornithological All other	13 2 4 4	466 60 90 (est.) 54
Lectures (mgt.)	2	9
Slide showings/talk	2	42
Film showings	6	300 (est.)
Totals	33	1021

D. Hunting

About 640 acres in the southeastern portion of the refuge was open to hunting in 1969. Although the same area was open last year the percentage of refuge acreage decreased to about 24 percent with the addition of tract 27 during the year. With this last major acquisition the refuge hunting program can now be realigned to fulfill all refuge objectives.

Hunting of waterfowl, migratory game birds, pheasant, and deer (archery only) was legal within State regulations and season dates. Hunting pressure and success varied greatly and is explained in the following sections.

Waterfowl

The 86 day waterfowl season ran from October 4 through December 28 for both ducks and geese. The three-mallard daily and six-goose season limitations of 1968 were eliminated from the 1969 regulations.

Fair weather throughout the season limited hunter success with very few days when hunters came out with their five-duck limit. Duck numbers were far below the populations present for the 1968 season and also contributed to the reduced success.

Hunter success during the opening weekend was good and volunteer registration reports showed that 80 hunters spent 311 hours in the field, taking 205 ducks home in the bag. A few limits were taken and the bag averaged 2.56 ducks per hunter. Educated ducks, fair weather, and reduced hunting pressure caused a pronounced drop in success after the opening. Only two periods afterward, the last week of October and the second week of December, produced moderate success.

For the entire season projected figures indicated that about 1410 hunters killed a total of 1150 ducks, including crippling losses. The reported crippling loss of 130 birds (20.2%) was thought to be minimum.

Of 633 identified species of ducks shot, 52.4 percent were mallards, 19.6 percent all species of teal, and 4-5 percent each for widgeon, scaup and shoveler. This is in great contrast to 1968 when 96 percent of the kill was mallards.

Goose hunting on the refuge was limited with only six reported shot; however, reports of kills throughout the Bitterroot Valley indicated a harvest of 50 or so birds from the flock. Valley goose-use is building and future hunting opportunities should increase.

A complete summary of waterfowl kill survey data is shown in NR-IC.

Other migratory bird hunting was limited to snipe and a few of these excellent game birds were harvested incidental to duck hunting activity. Snipe populations were fair and opportunities existed, but the harvest probably did not exceed 20-25 birds for the entire season.

Pheasant

The pheasant hunting season was open from noon October 25 to November 23 with a limit of three, six in possession. Unlike last year, one and two birds of the limits could be hens. Success was minimal with no known refuge kills.

Hunter pressure was very light throughout the season with most of the activity coinciding with duck hunting activities. The refuge population of wild birds was down from previous years and no State releases were made prior to the hunting season. The absence of releases on the refuge discouraged many since hunters are very much aware of release locations. The reason for no refuge releases—too much cover which would reduce hunter returns.

Archery Deer

The river bottom archery season extended from September 21 to November 30. Although the refuge population of white-tailed deer numbered 25, relatively few frequented the area opened to hunting. A small acreage of brush and timber west of the county road provided fair archery opportunities, but only one hunter was known to take advantage of the refuge season. Once the waterfowl season opened opportunities were further reduced. Future realignment of the hunting program could provide considerably more earchery hunting which is slowly growing in importance.

E. Violations

Considerable time was spent in 1969 on patrol and enforcement activity, primarily during the 86 day waterfowl hunting season. At least one member of the staff was on duty throughout most of the season and patrol activities were instrumental in prevention of a larger number of violations.

A total of seven cases were handled, five of which were for late shooting. In addition, two juveniles were issued formal warnings through contacts with the individuals involved and their parents.

1969 Violations

Date	Name	Charge	Disposition
10/17/69 10/17/69 11/3/69	Hammersley, Arthur D. Kern, Bruce L. Sinkala, Michael E.	Late shooting Late shooting Shooting whist- ling swan	No disposition \$25/3.50 fine \$100/3.50 fine
11/4/69 12/9/69 12/9/69	Derenef, Richard F. Elton, Keith Anders Spierling, Robert B.	Late shooting Late shooting Late shooting & w/o license and stamp	\$25/3.50 fine \$25 bond forfeited \$25 ea. count & \$50 bond forfeited

Anticipated problems of trespass, and hunters entering the closed portion of the refuge through the Northern Pacific Railroad right of way did not materialize. Under an agreement with the railroad the refuge had legal authority to post and enforce trespass on the right of way this fall. Only two parties were encountered who were told about the closure and the reasons for it.

Hunting mortality of whistling swans using the refuge was alarmingly high this fall. In spite of preventative law enforcement activity at least five of the peak of 24 swans frequenting the area were shot. One apprehension was made, however, the most serious incident involving the shooting of three swans by two Ravalli County hunters will probably never be resolved.

TABLE I SUMMARY -- 1969

MONTHLY RECREATIONAL USE REPORT

Refuge name
Ravalli
State
Montana

Code D		onal ode (3-4)			iod 6	r. Mo. 9 (8-11)	
(Card Columns)	(12-13	,	(19-25) OR THE MONTH	(Card Columns)	(12 - 13		(19-25) R THE MONTH
ACTIVITY	Code	Total Number	Total Hours	ACTIVITY	Code	Total Number	Total Hours
Hunting: Big Game	01			On-Site Programs	22	1612	81
Upland Game	02	40	120	*Miscellaneous Wildlife	23	323	182
Waterfowl	03	1370	1680				
Other Migratory	04			Swimming	24		
Other	05			Boating	25	10	5
Bow	06	2	10	Water Skiing	26		
Fishing: Salt Water	07			Camping	27		
Warm Water	08			Group Camping	28	4	
Cold Water	09	410	1240	Picnicking	29	127	247
Environmental Education	10	16	30	Horseback Riding	30	134	378
ildlife Photography	11			Bicycling	31	80	80
Wildlife Observation	12	1325	1700	Winter Sports	32	55	130
Conducted Programs	13	2	8	Fruit, Nut and Vegetable Collecting	33		-
Field Trials	14		¥	*Miscellaneous Non-Wildlife	34	47	60
Wildlife Trails	15			Peak Load Day	35	250-	July
Wildlife Tours/Routes	16	2045	2790	Actual Visits	36	15,687	
Visitor Contact Stations	17	7325	3365	*Some duplication may some visitors particip			
Camping (wildlife related)	18	30	300	vities. Fee Area Use	37	111 000	TO CALL COURT
Picnicking (wildlife related)	19	870	1675	Number of Fee Areas	38	(14-	18)
Wildlife Interpretive Center	20			Fee Collections	39	\$	
Off-Site Programs	21	888	39	Collection Costs	40	\$	

Form 3-123 (Revised July 1969)

*Use reverse side to indicate types of activities summarized under miscellaneous codes 23 and 34. MAKE NO OTHER ENTRIES ON FACE OF THIS FORM.

VII. OTHER ITEMS

A. Items of Interest

On June 24, George A. Devan and his family, wife Eleanor, and daughter Susan, left for their new home at the Willapa National Wildlife Refuge, Ilwaco, Washington. "Ged" was stationed at Ravalli for almost five years after coming from Red Rock Lakes Refuge near Monida, Montana.

We understand that the Devan family was having some difficulty adapting to the climate, but that they were also gaining new and interesting experiences on a rather unique area.

On August 22, Howard A. Lipke and his family, wife Alynn, and two daughters, Jennifer and Julie, arrived at their new Ravalli home. It was "kind of" a return home for Howard after graduating from the University of Montana, Missoula, in 1963. He had been with the Bureau for six years with duty stations at Huron, S.D. (Wetlands Acquisition), Necedah Refuge, Wisconsin, and Agassiz Refuge in Minnesota.

The Lipkes are enjoying their new home and Howard is very optomistic about the role of Ravalli in the wildlife conservation effort.

B. Photographs

Photos were taken by George Devan and Howard Lipke.

C. Narrative Credits

Data summarization, weather summary, typing and assembly--Mrs. Anderson. NR forms, photo captions, and entire narrative section--Lipke.



Refuge Manager, Howard A. Lipke



Clerk, Mrs. Ellen H. Anderson



Maintenanceman Leader, Thomas B. Davies



Maintenanceman, Otto Wolf



Show during January was unusually heavy for the valley. Depths of up to 20th necessitated removal and resulted in wildlife food and cover shortages. 1/69 GAD



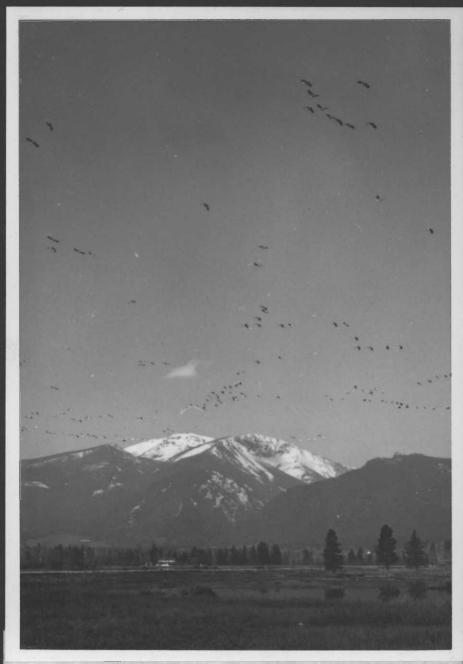
Trapping difficulty limited banding success as only 231 mallards were banded in the post-season effort. Returns to date indicate local harvest. 1/69, GAD



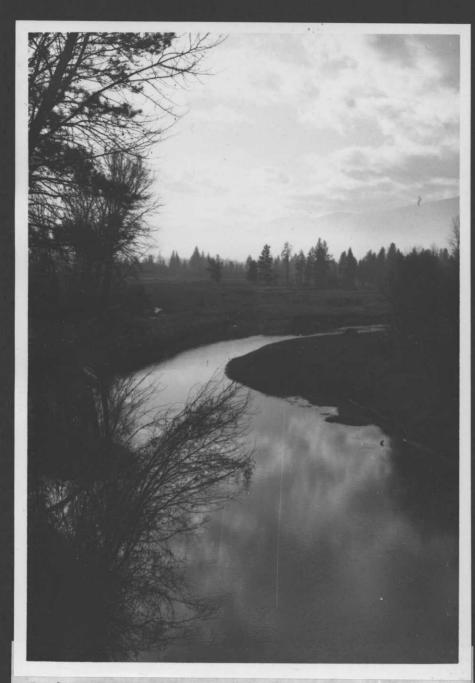
Tires and nest material placed on nesting islands contributed to the record 50 geese raised to flight stage. Higher production is anticipated. 4/69, GAD



Construction of a pumphouse on Spud Cellar Pond, which stores Ditch Association water, delivers water to 20 cropland acres on east refuge benchland. 5/69, GAD



Goose use tripled that of any previous year. Spring snow goose use attracted much attention and fall Canada peak of 280 was highest ever recorded. 4/69 GAD



Condemned tract 27, now under refuge administration, offers good potential for development. Oxbow necessitates diking to exclude Bitterroot River. 12/69,R-4,HAL



Dike constructed in east portion of tract 13 floods about 10-15 acres and spreads water for improved pasture and nesting cover. 5/69, GAD



About 50 wood duck boxes supplement nest sites in an already productive habitat. Late season checks indicate good acceptance and hatching success. Sp. 69, GAD



Spring brings peak in school tour-group activity. A total of 30 organized groups of 1200 people were entertained on tours, talks, lectures and showings. 4/69, GAD



Considerable fencing followed last major acquisition. Future cross-fencing will further regulate grazing of 200 head of stock on six units. 12/69, R-4, HAL



In addition to irrigation of 135 acres of cropland, water was used to irrigate 170 acres of grassland. Cover was good, even late in the season. 9/69,R-1,HAL



Noxious weed infestations, even though providing wildlife cover, will require continued control. County Weed Board is now more active. 10/69,R-3,E-20,HAL



Bitterroot River overflow always poses threat to development. This short section of levee west of Pool 10 will reduce flood threat to that unit. 9/69, R-1, HAL



Although hunting success was generally poor, about 1150 ducks were killed by the estimated 1410 hunters using the refuge. 52.4% were mallards. 10/69, R-3, HAL



Environmental education is essential to the future of resource conservation. Several lectures stressed ecology and man/environment relationship. 12/69,R-3,HAL



Wooded portion of new tract 27 offers potential for environmental education and recreation. Nature trail, picnic area and river access anticipated. 3/69, GAD



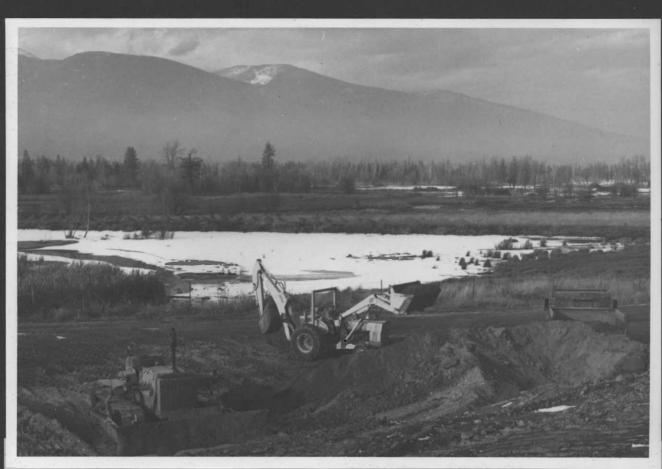
Dozer and scraper work were required on tract 21 dike which will flood about 20 acres. The pool is suited for seeding of moist soil plants. 10/69,R-2,E-23,HAL



The unit receives overflow from Pool 2 which insures needed water supply for millet plantings. Levels are controlled through 18th half-riser. 10/69,R-3,HAL



Pool 8 dike, an outgrowth of a vehicle crossing, has provided some excellent waterfowl habitat, but low and narrow dike was not ample. 10/69, R-2,E-10, HAL



A total of 3500 yards of fill were hauled from bench east of the unit to raise and widen inadequate dike. Additional raising is anticipated. 12/69, R-4, HAL



Goose nesting platforms supplement natural habitat. One of three over water was used. Structures in trees unchecked and difficult to maintain. 12/69,R-4,HAL

SIGNATURE PAGE

Submitted by:

Howard a. Liphe (Signature)

Refuge Manager (title)

Date: February 27, 1970

Approved, Regional Office:

Date: 4/2/9

Signature)

asst. Reg'l Refuge Supervisor

(1)	(2		(;	3)	14	¥)		(5)		(6)
III. <u>Doves and Pigeons</u> : Mourning dove	2	11/22	50	11/26	150 SH				a) eR	500 SW
White-winged dove	1 1 1	1/7	2	4/3	Peak Num	F\50	(Z) Flest S		(1) Reises	2
Golden eagle Duck hawk	1	1/7	3	2/7	2	1/20	nedab)		един поп	Com
Horned owl Magpie Raven	Prom last	3/19	114 150 12	April h/12	100 °	b/26	Page and	4	8 est.	20 150 20
Crow March bank Rough-log bank Radiail bank	20 las 2 las 2 s	i/A period	8 6 3	173 173 173 173	20 at	ill prese				150 20 150 10 10
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	(4)					Reporte	d by G.	A. Develo	Refuge H	anager

(1) Species:

Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gavilformes to Ciconiiformes and Gruilformes)

II. Shorebirds, Gulls and Terns (Charadriiformes)

III. <u>Doves and Pigeons</u> (Columbiformes)

IV. <u>Predaceous Birds</u> (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

3-175	51
Form	NR-1A
(Nov	1945)

MIGRATORY BIRDS

(other than waterfowl)

there

Refuge Ravalli

Months of January to April 19/69

(1) Species	First	(2)	Peak N	3)	Last	1) Soon		(5) Production	rob begati	(6) Total
Species	FIRST	Seen	_ reak N		Last	Deell	Number	Total #	Total	Estimated
Common Name	Number	Date	Number	Date	Number	Date	Colonies		Young	Number
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. Water and Marsh Birds:		No.				State of the latest			NW.E	Duck h
Great blue heron	From Las	period	14	1/25	11 sti	1 preser	100		170	20
Eared grebe	1/2	3	27	4/26	27 #	89	9			50
Pied billed grabe	4/13	7	15	4/26	20 11	#	Jan. 195			50 30
Red necked grebs	173	1	27 15 4	1752 1756 1759 1753	1	14/23			15/01/	10
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. Shorebirds, Gulls and	nolfibba	aI ote	"Haras"	"flegres	es ented	Lareney	hlora n	abra		5 000
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Killdeer and Das Lagot De	From less		50	4/26	Still p		sepada ox	sing		100
Wilson's snipe	1000 000	1040	200	4/26	=	** MINOUN	je unizodki i	unite		300
Creater yellowlegs	27	11/20	350	4/25	100 #	F PRESEN	8			100
Wilsons phalarope	123	PA55	50 150 70	17.56 17.52	200 #					300
(Septilions)										300
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	*							4		
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MIGRATORY BIRDS (other than waterfowl)

thru

Refuge Revails

Months of

23 August 19669

(1) Species		2)	(3			4)		(5)	rob beginn	(6)
Species	First	Seen	Peak Nu	mpers	Last	Seen	Number	roductio Total #	Total	Total Estimate
Common Name	Number	Date	Number	Date	Number	Date	Colonies	Nests	Young	Number
. Water and Marsh Birds:	1.6.								oag.co wk	Colden Drok h
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					CHECKE					
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. Shorebirds, Gulls and	add1thbs	al pis	"niein"		HA PHT9	Lenenen	Life IA			
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Least sandpiper	io tavias	5/24	i e ni ii		Pew still	present	l'internation	edf .	obody state	
Black tem		5/24	100			5/24				
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	lautes but	a amol/av	reedo ka		uboriq gas		inua balai	Office To	neltoute	
				(over)						

	(1)	(2)	(3)a Yaota	DIM 14	1)		(5)	14	(6)
III.	Doves and Pigeons: Mourning dove	150 last period	(Lwol:		100-150	KIII pro	eat	rest o	Refu	Nov. 1945)
	White-winged dove	79	E tasi		Pesk Numb	200	First S		(I)	
	btal # Total Estimi	T redmid					N N N N N N N		202700	
IV.	Predaceous Birds:	Date Calender'			Mumber	Date	n admily		enst non	geO Com
	Golden eagle Duck hawk Horned owl Magpie Raven	10 last period	ZM= 05-4		Pow st411	procest	d spak A	abula	derell bu	a rejsW I Is down on town!
	Crow Karch hank Rough log hank	20 6			6-8 -	promote				
	Red tailed bank Osprey Sparrow bank Turkey vulture		1	8/29	3-5 still Present i Several of For prese	n area				
						Reported	l by Lon	rard A. L	(gilgo	

(1) Species:

Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gavilformes to Ciconiiformes and Gruilformes)

II. Shorebirds, Gulls and Terns (Charadriiformes)

III. Doves and Pigeons (Columbiformes)

IV. <u>Predaceous Birds</u> (Falconiformes, Strigiformes and predaceous Passeriformes)

INTERIOR -- PORTL AND, DREGO

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

Refuge Revalli

UPLAND GAME BIRDS

Months of

thru

Hay 88

August , 19 69

(3)(4) (7) (1) (2) (5) (6) Sex Young Removals Species Density Total Remarks Produced Ratio Number broods obs'v'd. Estimated Total For Research For Restocking Estimated Hunting number Pertinent information not Acres Cover types, total specifically requested. using per List introductions here. acreage of habitat Percentage Refuge Common Name Bird 75-100 Population of the valley Ring-necked 23-31 Lasume 1/1 Brush, grass, eggiculturel land remains low- Some production pheasant 2300 acres occurring with brood observations most commonly made in south portion of refuge. Combining operations revealed relatively few adult birds. bluode bernico poine a edit of eldealles angulos vino: *

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct comm	on name.
-------------------------------	----------

- Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series Nc. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

^{*} Only columns applicable to the period covered should be used.

3-1750 Form NR-1 (Rev. March 1953)

WATERFOWL

					(2)					
(3)			Weeks		report		period			
(1) Species	8/31-9/6:	9/7-13	9/14-20	9/21-27		10/5-11	: 10/12-18	10/19-25	10/26-11/	
Swans:	1 1		•)	1	1	. 0	-	. 0	: 9	: 10
Whistling	1								8	20
Trumpeter										-
eese:			+			 	+			-
Canada	i 1			3	9		90	90	100	100
Cackling				-	-	-	70	70	200	200
Brant			+		-	1	-	1	1	-
White-fronted				-					1	-
Snow				1 1						
Blue									3 (1.34)	1.1.
Other TOTAL				3	9		90	90	100	100
oucks:					170					- 1 -
Mallard	750	850	800	800	900	1,120	1.180	1.475	2,110	2,200
Black								36) H 9		
Gadwall						20	30	30	80	60
Baldpate	200	220	220	200	595	660	600	540	1.80	350
Pintail	ha	Tio	60	70	40	15	85	110	175	150
Green-winged teal	75	125	125	180	205	124	105	75	105	150
Blue-winged teal	200	190	190	90	5	5	5		5	5
Cinnamon teal	150	130	130	60						
Shoveler	90	100	120	90	50	15	15	15	20	20
Wood	130	130	130	100	80	1.5_	30	15	15	ic
Redhead	20	20	10_	20_	10	10	35_	15	20	20
Ring-necked	35	35	35	55	55	25_	10	5	10	10
Canvasback						1	1		F1972.4	
Scaup				10	10	35	44	55	90	90
Goldeneye	15	10	10	10				77	15	5
Bufflehead						15	30	15	15	15
Ruddy	1.0	10	10	50	160	1,5	45	25	10	1.0
Othern merganser	30	30	30	20	10	20	20	20	20	20
TOTAL	1,775	1,920	1,900	1,755	2,000	2,196	2,246	2,395	3,200	3,150
oot:	850	850	1,640	1,640	1,660	1,550	1,670	1,200	1,240	550

Refuge parelli

has profitable to the arts there (a) best to train a reserved a section of the contract of the

Year ending April 30, 1969

(1) Species	(2) Density	a i Beriol socialit	res	Rem	(3) ovals	e de es	* 3a	D	isposi	(4) tion of	Rire	21021		(5) Estimated Total
na colo de	derical belfat-wither took black and	ete esi	3.0	174		e ya even		Shar	e Trap	ping	nge	ted		Popula-
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest Predator	Predator	For Restocking	For Re-	Permit Number	Trappers	Refuge	Total Refuge Furs Shipped	Furs Donated	Fure Destroyed	tion
Mak new a	March, 1000 acres	33	ned Deed	de s	es d		AND CONTRACTOR	A TO YE	9.13					30
Beaver - Andrews	e cardo Tros do Empleo do Je La Cardo de Mario de Cardo de La Cardo de	165		1 44 0 1 0 1	# No. 18	nesd ags	Re, E	Madani i Logicia						6
Haskrat	printing and any public of	7	ca i	100 M	ad a	erran Erren	o kni general	Becking to						150
Striped skunk	Grees, brush, 2200 A.	73		941 8 530	3	1 700	BSB B	AN ATTE						30
Red fox a backer	• • • • • • • •	110	Lan	2 16	12	TO EX	5 T	mede sen	r.Em.					20
Tellow-bellied mermot	Upland, 1000 acres	50	8613	9 3122	6		200	is paraci	beli		12.	AVON	a (s	20
Red squirrel	Timber, 1000 acres	10	nedi ne	Large Large	2 200	BRACK BA W	de o	id	120					100
Columbian ground equirrel	bressland, 1000 acres	2	nag ly	82 13	Persi Dala	ann't	pedia pedia	es-ermi	nd i	125 TO	MOTT	e A	a f (d	500
Badger Raccocn List removals	directorton, timber	110 r 10	EAS	ben Est	100	Abass da a	begg atwo	nal to						6

REMARKS:

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES:

Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY:

Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS:

Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF TUR:

On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION:

Estimated total population of each species reported on as of April 30.

REMARKS:

Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

Remails

Refuge

there

Months of January

10

April 19 69

Form NR-2 - UPLAND GAME BIRDS. * (3) (4) (1) (2) (5) (6) (7)Young Sex Species Density Removals Remarks Total Produced Ratio Number broods obs'v'd. Estimated Total For Restocking For Research Estimated Hunting number Pertinent information not Acres specifically requested. Cover types, total using per Refuge acreage of habitat Bird Percentage List introductions here. Common Name Ring neck outge Brush, grees, Pigures require communing reverting as and, eruj at end of period. tressedy agriculture dard tour 100 #2300 acres Mediabloging birds moved to should be based o Tes s e possible. refuge cover during the Comes evidedencer m counts harsh winter, then departed rea or areas should be indicated under size of sample this crains. Estimated number of young produced, based upon observations and actual counts in representative brieding habitat. This column applies wimerily to wild turiey, pleasants, etc. Include data on other spectes if available. Indicate total number in each category removed furing the report period. Estimated total number using the refuge during the report period. This m include resident birds plus those migrative into the refuge during certain seasons. Indicate method used to determine population and area covered in survey. .bejgeop r vilatilise a jon notament in not a politically requested. * Only columns applicable to the period covered should be used, Mincludes newly acquired tract 27 1613

Mayall

Form NR-2 - UPLAND GAME BIRDS.*

.BT

(1)	SPECIES:	Use correct common name. (4) (6) (2) (1)
	DENSITY: Pertinent informa specifically rependentionally set introduction	Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area
	Physics require a strike a series of perfect black black black black cores duri barra daring the pering.	of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
(3)	YOUNG PRODUCED:	Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
(4)	SEX RATIO:	This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
(5)	REMOVALS:	Indicate total number in each category removed during the report period.
(6)	TOTAL:	Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
(7)	REMARKS:	Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

^{*} Only columns applicable to the period covered should be used.

Cont. NR-1 (Rev. March 1953)

WATERFOWL (Continuation Sheet)

Species :	,	11/16-22	11/23-29	(2 repor 111/304//: : 14 :	ting 12/7-13 2	12/14=20 :	o d 12/21-27: 17	12/2 8-//3	waterfowl	: (4 : Produc :Broods: : seen :	tion Estimate
vans: Whistling Trumpeter	16	6	data rea	orded und	or (3).	1			357		
canada Cackling	105	125	125	130	205	220	280	200	12,474	Mare sen	io tiano
Brant White-fronted Snow	yae:	JES ADSK	A bobiji	tions X I	umber of	QSAS DES	SUE OF	each aped	7637 7		
Blue Gebeer TOTAL	105	125	125	130	205	220	281	200	12,481		
Mallard Black	2,200	2,300	2,400	2,600	2,500	3,635	4,290	3,250	247.520		
Gadwall	60	20	35	30	20	20	20	20	3,115	g pe s	(102)
Baldpate	300	300	200	165	165	1.KG	70	70	on 38 7130 aur	le the	
Pintail	150	75	150	70	70	70	70	50	10.640		
Green-winged teal	175	60	175	175	160	150	100	70	16,115		
Blue-winged teal Cinnamon teal	5	1.4							3,290		
Shoveler	20								3,885		
Mood	10				Repor	16d by	1000024		4,900		
Redhead	20	10							1,470		
Ring-necked	10	10		5				3	2,121		
Canvasback	1	5:		1					56		
Scaup	125	10	20	10	10	10	THE 115	5	3,780		
to I deneve	5	10	25	5	5	5	5	10	945		
Bufflehead	15	10	10	15	5	O STORY	5	5	1,295		
· Lady	30	15 25		1		-		2	3.171		
other H. merganser	50	25		5	5	hay 10 ar	10	10	2,345		Service Control
A. merganser			5			7.7	- 201		35		
oot:	3,175 450	2,850 60	3,050	3,082	2,940	Lt, 055	4,575	3,495	318,313		

(5) Total Days Use	(6) Peak Number:	(7) Total Production	50 I 3.5.8	us said	SUMMARY	31350		
Swans 357	20	3 1	Principal fee	ding area	s Pool 2	prior to hu	ting seas	on,
Geese 12,481	281	180 - 18	pools 8 and	10 after.	Light u	se of tract	20 grain.	
Ducks 348,313	4,575	25 TO	Principal nes	ting area	8	3,780		
Coots 94,220	1,670	= 3				\$2787 74150		
моод	10		Reported by	Howard	A. Lipke	Refuge Mana	ger	
Cinnamon tesi Spoveler	50			1	1	3*500		
(1) Species: (2) Weeks of Reporting Period:	reporting per to those spec	o the birds liste iod should be add ies of local and rage refuge popul	ed in appropriat national signifi	e spaces.				iven
(3) Estimated Waterfown Days Use:		y populations x n	umber of deve or	esent for	anch spec	100		
(4) Production:	Estimated numl breeding area	ber of young prod s. Brood counts tat. Estimates h	uced based on ob should be made o	servation n two or	s and act	ual counts or saggregating mitted.		
(5) Total Days Use:	A summary of	data recorded und	er (3).			362		
(6) Peak Number:	Maximum number	r of waterfowl pr	esent on refuge	during an	census o	of reporting	period.	Eştima total
(7) Total Production:	A summary of	data recorded und	er (4).			Estimated	: Produc	

Interior Duplicating Section, Washington, D. C. (BEAT WELLP1953)

3 -17504

BEEDGE HVAVITI

MIGRATORY BIRDS

(other than waterfowl)

thru

Refuge Ravalli

Months of September to December 19569 bas seved III

(2)	(0)		(7)		4\		ing dove	
(1) Species	(2) First Seen		(3) Numbers		4) Seen		11 (14 4 (11)	Total
Species	FIRST Seen	reak I	vumbers	Last	Seen		* * * \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	Estimate
Common Name	Number Date	Number	Date	Number	Date		(1 a t a a a a a a a a a a a a a a a	Number
Odminor Name	14dmber Back	, rambor	1 580 834	- Number	Baro			Golder
I. Water and Marsh Birds:				Pess	Look eds	Fort L	berse-drods:seed	bratowitk
Great blue heron	From last perio	d 30	Late Oct.	3	12/27	(19 counted	10/25; rintering	907 of 0
Eared grebe	From last perio		eent	200	bolisse	From last		le Pew
Pied billed grebe	From last perio		Barly Oct.		12/27	(13 counted	, 10/10)	10 V 200
Red-necked grebe	1 10/10		Oct.	1 999	10/10	Fron Lnag		wor Few
Western grebe	4 10/10		10/10	2 -00	11/3	8 8	hanalic	demok 5
	Dec.		4	3-6			-Legged hade	
			Sept.	Lovevel			stari belik	
		1 12/	Sept.	L or 2	12/27		our insule	
			Dec.	I	.300		ahood a ty	Pigeo
			8E-9\LI	1-3	6/17		poorts haste	Sundan
esighi A imples	ourted by Mown	7 9/2	arly Sept.	7 8		From Last	englis v	
II. Shorebirds, Gulls and Terns: Killdear Wilson's snipe Greater yellowlegs	to I addition	d 200 200 Several	"seagull"	terms as I at Sent I Late I Late I I Late I L	12/27 12/28 11/18	(Wintering)	d d	(1)
Sandpipers end bas semio					ALU UCC		-	
Passeriformilian sook	From last perio			1	12/21			
Forster's term	110100 09/15	Ber Tew To	Sept.	of tol the	9/15	ten fanil e	irst Seer:	(S)
Ring-billed gull	1 9/15	1-3	Sept.	1	12/28			10
, emit	ted interval o	mil s ni Jim	ies presen	the spec	o Tedaer	greatest	eak Numbers: Th	(3)
	Bason concerned	or odf gning	species du	end rol l	ge record	e last refu	ast Seen	(4)
counts	tions and actual	on observa	bessd bear	ung produ	y lo rec	timated num	roduction: Es	(5)
	ige during the p	ing the refu	(over)	of the s	number	itimated tot	Cotal: Es	(6)

(1)	(2	Marin Land	200	3) YHOTAH	DEM (4)	1.2	(5)		A(6)
III. <u>Doves and Pigeons</u> : Mourning dove	From last	period	And the second s	Sept.M	redito)	***************************************	111	ge Rava	Refu	Nov 1945
White-winged dove		een	(4)		(3)	1	(2)		(1)	
Estimate Estimate	Trimeteries of week or		l tasi	2100	Peak Nu	een	First:		pecies	
IV. Predaceous Birds of prev	From las		1-kdmg//	Sept.	n AlmuM	10/4	ТефшиИ		mon Name	100
Golden eagle Control & Short cared Horned owl	1 Few 8-10 re	12/29 Late Dec	The second secon	Late Dec.		resent	draw C want	Birds:		retsW I
Magpie Raven	From last	The state of the s	200	Hov.	60-80	Firstering Percent (w	ron Last	9	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Bereil
Crow Marsh hark	From last	period	Few 10-15	Sept.	2	12/27 (**	intering)		ked grebe	
Rough-legged hank		-	Few			Late Dec.	Tron Tag		anază	medbeld
Red tailed hank Sparrow hank			3-5 Several	Sept.						,
Pigeon hawk	1	12/27	1 or 2	Dec.	1	12/27				
Cooper's hank Swainson's hank	1	Dec.	1-3	Dec.						
Turkey vulture	From las		7	Early Sep	t. 7	Reported	by How	ard A. Li	pke	

(1) Species:

Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes) significance.

II. Shorebirds, Gulls and Terns (Charadriiformes)

III. Doves and Pigeons (Columbiformes)

IV: Predaceous Birds (Falconiformes, Strigiformes and predaceous From last ported

Passeriformes)

Forster's term

Mang-billed gull

(2) The first refuge record for the species for the season concerned. First Seen:

(3)Peak Numbers: The greatest number of the species present in a limited interval of time.

(4)Last Seen: The last refuge record for the species during the season concerned

(5)Production: Estimated number of young produced based on observations and actual counts.

Estimated total number of the species using the refuge during the period concerned. (6) Total:

WATERFOWL HUNTER KILL SURVEY

Refuge ___

Ravalli

Year 196_9

			IMSTRUCTIONS					
*(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/4-10	ол по	hoh and to ation sh proport	Mallard 88, G. W. teal 36, Unknown teal 24, Ring necked 17, Shoveler 15, Wood 13, B. W. teal 12, Widgeon 7, Pintail 5, Scaup 4, H. merganser 3, G. merganser 2,	no have		269		
10/11-17	55	158	Mallard 18, Unknown teal 6, Widgeon 5, G. W. teal 5, Scaup 1, Shoveler 2, H. merganser 1	38	aken to col	adj bro		
10/18-24	-30 m	85	Mallard 15, G. W. teal 11, Widgeon 3, Canvasback 2, Shoveler 2, Gadwall 1, Unknown teal 1, Wood 1, Merganser 1	37		Leel bes	The state of the	
10/25-31	55	199	Mallard 21, Widgeon 10, G. W. teal 8, Scaup 8, Gadwall 5, Shoveler 3, Canvas- back 2, Bufflehead 2, Unknown teal 2, Pintail 2, B. W. teal 1	64	13 14 14 15 15 15 15 15 15 15 15 15 15 15 15 15	77 stot bro	(6) Rec	
11/1-7	140 Ebu L	181	Mallard 22, Unknown 9, Scaup 4, Shoveler 4, Widgeon 2, Gadwall 2, Goldeneye 2, Unknown teal 2, Pintail 1	-(2 0	togel mur cked (Colum	ers che		
11/8-14	51	145	Mallard 14, Widgeon 3, Scaup 3, Unknown teal 2, Pintail 2, G. W. teal 1	25	3	28	(()	
11/15-21	43	126	Mallard 27, G. W. teal 3, Scaup 3, Goldeneye 2, Pintail 2, Gadwall 1, Red- head 1, Bufflehead 1, Unknown teal 1	归	12	53		
	10348-60							
			(over)					

10/4-10

10/11-17

10/18-21

TO/52-3T

11/1-7

11/8-14

INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge munters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Greenwinged Teal (1).
- (5) Record total numbers of waterfowl bagged.

12

- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.

53

Year 196 9

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

back 2, Bufflehead 2, Unicoben total 2,

teel 2, Fintail 2, 0. W. teel 1

Wallard 27, G. W. tosh 3, Bosum 3.

Goldenaye 2, Martail 2, Gadwall 1, Red-

Pinted 1 . H . S LbsdnPi

(9) Kill sample projected to 100 percent. Column 9 = Column 8 x Column 7.

The

Refuge Ravalli

Year 1969

			INSTRUCTIONS					
(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
11/22-28	28 broos	90 t of Ans	Mallard 12, G. W. teal 2, Unknown teal 1, Scaup 1, Widgeon 1, G. merganser 1, H. merganser 1	19	werus of	dely i	dab	
11/29-12/	31 00 10	71	Mallard 2h, Scaup 2, Unknown teal 1, Widgeon 1	28	uting each iffor dexpe ken to col	32	the the	
12/6-12	42 ((61),		Mallard 50, Unknown teal 5, Pintail 3, Widgeon 2, Scaup 1, G. W. teal 1, Unknown 1			83 br		
12/13-19	38	(3)	Mallard 15, Pintail 1, Unknown teal 1		Redhead (1). 6	20	Pin	
12/20-26	49	158	Mallard 20, Goldeneye 2 .bayasd fwo	22	o 225 imma .	st27 br	(5) Rec	
12/27 & 28	24	34	Mallerd 7, Pintail 2 b beloom beloogs Iwo			ad 13 ba		
HOWALS	595	1953		644	130 (min- imim, 20,23)	774	1/10	11150
	Surper	eek, 1no	Breakdown for 633 reported known species:	2).	total num ked (Colum			
	03-8460	ц6- 13-	Mallard 333 52.4 Goldeneye 7 G.W. teal) Teal (unk.)) 126 19.6 C.merganser 4 B.W. teal) Widgeon 34 5.2 Redhead 3 Scaup 27 4.2 Bufflehead 3 Shoveler 26 4.1 Ruddy 1 Pintail 18 Unknown 11 Ring-necked 17 Wood duck 14 Coot 21 Gadwall 11 Snipe 4		a geese 5	sample.		
		12	(over)					

Year 1969_

Page 2

Refuge tavalit

INSTRUCTIONS

	<u>INSTRUCTIONS</u>			
(6)	(4) (5) (6) (7) (8)	(3)	(2)	(1)
Est. Tot	Veterford Speed on and Mon of Wook Street Crippling Total Est. No.		No. Hunters	lo exes
Kill	(1) The first week of hunting begins with opening day and ends at the close of	f huntin	g 6 days	an ideus
	later. Successive weeks follow the same pattern.	90	28	178.95
	(2) The goal is to survey a minimum of 25 percent of refuge hunters each week	and to	record	+
1 4 5 7	data only from those who have completed their day's hunting. This information			
	collected during each day of the week and in each area hunted in relative			3/21-62/T
	the hunter effort expended. When the 25 percent goal cannot be achieved, should be taken to collect representative data.	particu	lar care	12T-62/T
	should be taken to collect representative data.			
	(3) Record the total number of hours the hunters spent hunting on the refuge.	189	Li2	2/6-12
	Widgeon 2, Sesup 1, 0. W. tosl 1, Unknown			
	(4) List waterfowl species in decreasing order of numbers bagged. Sample entured Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Go	ry: Mal	Cross	
	winged Teal (1).	oose ())	, dreen-	2/13-19
	(5) Record total numbers of waterfowl bagged.	158	149	2/20-26
19. 14	(6) Record total numbers of waterfowl reported knocked down but not recovered	34	2h	2/27.8
	(0) Record 500al humbers of maserious reported another dubin out not recovered	4sc	420	89
OSIT 1	(7) Total of Columns 5 and 6.	1953	\$65	EJATOT
	(8) Estimate the total number of hunters who hunted on the refuge during the	week, ind	luding	
	hunters checked (Column 2).	, ,		
	(a) vizz 2 1 - 200 1 - 2			}
	(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.	67-		
	Teal (unk.)) 126 19.6 C.mergenser h			
	B.W. teal) Canvasback h			
	Widgeon 3h 5.2 Redhead 3			
	Scaup 27 h.2 Bufflehead 3 Shoveler 26 h.1 Ruddy 1			6
	Shoveler 25 h.1 Ruddy 1 Finteil 18 Unknown 11			
	Bing-necked 17			
	Wood duck 1h Coot 21 Canada goese 5			
	deducid il Snipe il Snow leese 1	8	30348-60	
		1		
	(over)			The second second

Ravalli December , 19 69 Months of September Refuge to Form NR-2 - UPLAND GAME BIRDS.* (3) (4) (1)(2) (5) (6) (7) Young Sex Species Removals Density Total Remarks Produced Ratio For Research For Restrocking Estimated Number broods obs'v'd. Estimate Total Hunting ni besserd Acres number Pertinent information not Cover types, total using specifically requested. per acreage of habitat Percentage List introductions here. Common Name Bird Refuge to furnish the de Ring-necked 16-20 1M/2F Population low and no State Brush, grass & 50-60 pheasant agriculturereleases made on refuge. 1000 acres Observations most frequent Lodge grass prairie. No. 7 should be Figures where possible. in south Tract 21 and west us ed Survey method used and evida edemon 1 observations an portions of Tracts 10, 11 tebru b size of sample area or areas should e indicate and 20. Hungarian (Gray) Grass & agriculture -- | now bess . be borg y Single flock of 13 observed Estilited number of youn in representative breeding habitat. partridge 600 acres along Co. road along west boundary of Tract 11. This column applies primarily to will turkey, pheasants, etc. Include data on Periodic use of refuge made by birds moving down from other species if availab foothills. Indicate total number in each category removed during the report period, Estimated total number using the refuse during the report period. This a include residert birds plus those migrating into the refuge during certain seasons, Indicate rethod used to determine population and area covered in survey. include of her pertirent information not specifically requested. to the columns applicable to the period dovered should be used

Form NR-2 (April 1946

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

December , 19 69

(1) SPECIES:

Use correct common name.

September

(2) DENSITY:

specifically requested.

releases made on refuge.

Observations most frequent

in south Tract 21 and west

portions of Tracts 10. 11

Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED:

boundary of Tract 11.

and 20.

Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO:

This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS:

Indicate total number in each category removed during the report period.

(6) TOTAL:

Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS:

Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

Refuge Ravalli

Calendar Year 1969

(1) Species	(2) Density	(3) Young Froduced			mova ()ţ)	untsu als			(5) sses	In	(6) itroductions	Estima Total I Popula	ated Refuge	(g) Sex Ratio
	Cover types, total Acreage of Habitat	Number	Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec.	
White-tailed deer	Brush, timber, grass & agricultural (1700 acres)	8	100	and H de Hali	194 18	cover but a			d kdli	ni Bar Lga	Manges soon ish the des crass swaip	25	20	1M/3F
anolsav area		Noted the State Survey Servey	ndia . B	lodm s as sast Mas	Lug a a	iquae Lquae to boo	old ev be	1881 1281 180	g ara gasen bat s	is the same of the	lifain sent o alawoo bo ode enoin i			
	, and the same	der no bes	750	rg g	ana	e To	tod	SUCC	isto	bed.	CED: Setima	KOURG PRODU	(8)	
	during the year.	bayonan y	1.08	n d mo	do	so zi	18	960	Listo	93	indica	STREAT ST	(40)	
	sames indicate total leases	lies elda	2.13	E 750	eh Te	recom ne yer	mer 19		io si b yto		nda nO a doas	1882801	(6)	Train.
	. Designed was decided.	acy from	93.5	TO	or Salv	tors b	225	100	in od	1 100	mibal :27	iorpoudderki	(3):	
83	on the refuge at period of t	spector o	Son Doc						egide spend		svi0 svi0	COPULATION:	(4)	
doil	baningas as determined	females of	ha	2 0 0	Ens	la s	100	10 ST	ing and	- eż	Indio:	SEE BATTE:	(3)	

Remarks: Three sets of twin fauns raised on refuge.

Known losses include two road kills and one poached on East Side Highway, east of Tract 27.

Reported by H. A. Lipke

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisians white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
 - (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

Reported by M. A. Light

- (4) REMCVALS: Indicate total number in each category removed during the year.
- (5) LCSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE
 POPULATION: Give the estimated population of each species on the refuge at period of its
 greatest abundance and also as of Dec. 31.
- (8) SEX RATIC: Indicate the percentage of males and females of each species as determined from field observations or through removals.

lower lovers to deep a serie in the series on the series of the in the or and or the series are

. mafter as bester and mild to also send

Remarks

	Refuge payalli	Year 19. 69							
一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一	Botulism	Lead Poisoning or other Disease							
	Period of outbreak NONE Period of heaviest losses Losses:	Kind of disease Species affected Number Affected							
	(a) Waterfowl (b) Shorebirds (c) Other	Species Actual Count Estimated							
	Number Hospitalized No. Recovered % Recovered	Number Recovered_							
	(a) Waterfowl (b) Shorebirds (c) Other	Number lost Source of infection							
	Areas affected (location and approximate acreage)	Water conditions							
	Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.	Food conditions							
	Condition of vegetation and invertebrate life	Remarks							

	_					1.
NONAGRICULT	L	COLLECTIONS,	RECEIPTS,	AND	PI	rings

Refuge	Ravalli	Year	19	69

75	(See			s and Re			Plantings (Marsh - Aquatic - Upland)								
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	- 10	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss		
		Non	in 1	969					None in 19	59					
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1														
								-							

(1) Report agronomic farm crops on Form NR-8	Remarks: Plantings of Russian olive, Honevauckle and Caragona
(2) C = Collections and R = Receipts	in 1968 are still showing good survival with only a few
(3) Use "S" to denote surplus	seedlings lost in the last year. Cultivation and watering
	in 1969 helped to further establish the plantings.
Total acreage planted:	Survival astinated between 75-80%.
Marsh and aquatic	
Hedgerows, cover patches	
Food strips, food patches	
Forest plantings	

INTERIOR--PORTLAND, OREGON

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

		ittee's		rnment's S			1 5 b		lanure,	
Cultivated Crops	Share	Share Harvested		Harvested		rvested	Total Acreage		and Water- rowsing Crops	Total
Grown	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons	Planted		Type and Kind	
Barley	62	3930 Bu.	9	540 bu.	22	1380 bu.	93	Winter wheat (browse		63
Wheat (Gaines)	47	4700 bu.	2	180 bu.	21	2100 bu.	70	but will	& spring, l produce	
	118	THE SECTION				DE LA PRESE	And Post	grain c	rop in 1970.)	
		THE STATE OF THE S		TARTA	Carrier D			B B		
		4		Change Construction of the	Harry Far	はなった。	A Part of the last	8 10		NATURE DE LA COMPANSION
Total	109	8630 bu.	11	720 bu.	43	3480 bu.	163			
	Date 1	SA PAR		programme or post of the post	or inc	ateches and		Fallow	Ag. Land	30
o. of Permittees:	7	2. 2. 2. 2.	ons	2	Haying	Operations	1	Grazii	ng Operations	6
Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash	THE RESERVE TO SEC. SEC. SEC. SEC. SEC. SEC. SEC. SEC.	RAZING	Numb		AUM'S	Cash Revenue	ACREAGE
Alfalfa	94	37	\$563.	88 1.	Cattle	18	0	754.36	\$2263.08	820
21		2 M2			Other *	2	5	90	142.29	180
		0 0 5	9 6	20 月 日 日	Total D	efuge Acres	ge Under	Cultivati	on	293
vorsb				1.	TOUAL R	er age veres	Po orraor	0 42 02 14 02	LOII	273

DIRECTIONS FOR PREPARING FORM NR-8 CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under <u>Cultivated Crops</u>, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

REFUGE GRAIN REPORT

(1)	(2) (3) (4) ON HAND RECEIVED		(4)		GRAIN DI	5) SPOSED OF		(6) On Hand	Propose	(7) ED OR SUITAB	LE USE*
Variety*	BEGINNING of Period	During Period	TOTAL	Transferred	Seeded	Fed	Total	END OF PERIOD	Seed	Feed	Surplus
Barley	300	540	840			150	150	690		690	
wheat, winter	(10) led	180	180	grain sh es proposi	pped in d	estination	of grain by	180	ја ов сов-	180	
White-dutch clover	(9) Wh	Te 518	8	eadquarter		sper	•	8	8		
Timothy	(E) Neg	31	31	eropa. r skipping	AHO LOGG	sug.	-	31	n		
	(I) Inu		sel breik-d	MAN DE ASS	rietirs of 1	rain lister	in column		if grain is		
	(4) A44		aces it gird 3. obegon 5.		1 41 10 1						
	(a) preh	ort all gree	n received d	uring peri	od from al	вопроен,	such as tran		ropping, or		
	0.1 26.	do, new er. Il net suffi her rofuge	e, us spessio		re necession	y in cons	sting as con dering trum d other seed		supplies to l on NR-9.		
	. (1) rest		of grain sep garnet wheat				corn, yellow spring when		quare deal it, combine		
	in shall be lb., barley- ted—50 lb.	considered 50 lbs, ryc	ashels. For equivalent 55 lb., out ing volume o	to a bush 5- 30 lb.,	el: Corn (soy beans	shelled)— -60 lb., u	55 lb., corn fillet50 lb. contents (cu	pproximate (ear) - 70 H compess - ft.) by 8.8 b	weights of a, wheat— 0 lb., and ushels.		

(8) Indicate shipping or collection points Northern Pacific R.R. depot, Stevensville

(9) Grain is stored at Headquarters granaries -work center and Q-2 area.

(10) Remarks Barley and wheat used for banding and emergency feeding.

^{*}See instructions on back.

REFUGE GRAIN REPORT

Tor beginning and amortioney recountly

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

3-	1761
Form	NR-11
(2)	(46)

TIMBER REMOVAL

Method of slash disposal

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cu
NONE								
					1.11			
						7		
		u u						

INT.-DUP. SEC., WASH., D.C. 36103

No. of units removed B. F.

Cords

Refuge

Ravalli

Proposal Number | Reporting Year

1969

ANNUAL REPORT OF PESTICIDE APPLICATION

	INSTRUCTIO	NS: Wildlife Refuges Ma	anual, secs. 3252d, 3394b and	3395.					
	Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	Early June	Broadleaf annuals: Mustard Canada thistle Scotch	Agricultural lands- tracts 10, 11, 19, 20, 21	163	2,4-D, PGBRE	կկ 1bs./A. (11 gal.@կ#/A)	.25 lbs./A.	10 gal/A.	Tractor with boom apray
(2)	June 1-10	Knapseed Thistles	Dikes & roads, patchessouth refuge area	8.6	2,4-D, DMS	24 lbs./A. (6 gal.@4#/A.)	2.8 lbs./A.	20 gal/A.	County spray- truck, hand nozzle
(3)	June 11 & 13	Knapweed Thistles	Pasture- G-19 tract 19 W.	28	2,4,D, DMS	84 lbs./A. (21 gal.@4/A.)	3 lbs./A.	Water 20 gal/A.	

10. Summary of results (continue on reverse side, if necessary)

^{(1) 95-100%} kill on prime target (annual mustard); slowed growth of thistles but very little kill resulted (3# rate needed for thistle control).

⁽²⁾ Estimate 60-75% kill. Heavy density of some thistle patches along dikes prevents complete coverage of all plants. Repeated sprayings needed to eventually control infestations.

⁽³⁾ Grassland sprayed at expense of Forest Service. Spot treatment of remaining patches from previous control efforts on 80 acres of grassland was 50-75% successful. Each year of spraying reduces pest plants and improves grass cover.

Refuge	Ravalli	Year	19. 6	9
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Botulism	Lead Poisoning or other Disease
Period of outbreak NONE	Kind of disease
Period of heaviest losses	Species affected
Losses: (a) Waterfowl (b) Shorebirds (c) Other Actual Count Estimated	Number Affected Species Actual Count Estimated
Number Hospitalized No. Recovered % Recovered	Number Recovered_
(a) Waterfowl (b) Shorebirds (c) Other	Number lostSource of infection
Areas affected (location and approximate acreage)	Water conditions
Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.	Food conditions
Condition of vegetation and invertebrate life	Remarks

				((1)
NONAGRICULTURAL	COLLECTIONS,	RECEIPTS,	AND	PLANTINGS	

Year 19 69 Refuge Ravalli

	(See			s and Recks, tre			Plantings (Marsh - Aquatic - Upland)								
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss		
		Non	e in l	69			1		None in 19	59					
			*												
	-		41										1 P		

(1)	Report	agronomic	farm	crops	on	Form	NR-8

- (2) C = Collections and R = Receipts
 (3) Use "S" to denote surplus

T	otal acreage planted: Marsh and aquatic
	Hedgerows, cover patches
	Food strips, food patches
	Forest plantings

Remarks:	Plantings	of Russian olive, Honeysuckle and Caragana	
in 1968	are still	showing good survival with only a few	
		the last year . Cultivation and watering	
in 1969		further establish the plantings.	
	Survival	estimated between 75-80%.	26
		The state of the s	

INTERIOR--PORTLAND, OREGON

3-1758 Form NR-8 (Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Cultivated		ittee's Harvested		rnment's Si		Return	Total	Control of the contro	and Water-	
Grown	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons	Acreage Planted	Type ar	rowsing Crops nd Kind	Total Acreag
Barley	62	3930 Bu.	9	540 bu.	22	1380 bu.	93		wheat (browse & spring,	63
Wheat (Gaines)	47	4700 bu.	2	180 bu.	21	2100 bu.	70	but wil	l produce rop in 1970.)	NO - CHANCES
Totals	109	8630 bu.	11	720 bu.	43	3480 bu.	163	TH BOLD	or garder	MERALIN
	20 C C C C C C C C C C C C C C C C C C C	Spe ca	03 - 03	to be	M. Bein	A CHARLES	period to the total tota	Fallow	Ag. Land	30
o. of Permittees:		10 10 10 10 10	ns	2	Haying	Operations	1 5	Grazin	ng Operations	6
Hay - Improved		10 10 10 10 10	Cash Rever	. (Haying PRAZING	Operations Number	per	Grazin	2 2 1	
1 apiary - 50 hiv	res @.25 -	\$12.50	Cash	uve (8 8 6	Numb	per las	1813	Cash	6 ACREAGE 820
1 apiary - 50 hiv Hay - Improved (Specify Kind)	Tons Harvested	\$12.50	Cash	38 1.	RAZING	Numb Anin 18	per nals	AUM'S	Cash Revenue	ACREAGE
l apiary - 50 hiv Hay - Improved (Specify Kind)	Tons Harvested	\$12.50	Cash	38 1. 2. Hor	Cattle Other*	Numb Anin 18	per nals	AUM'S 754.36 90	Cash Revenue \$2263.08	ACREAGE 820

DIRECTIONS FOR PREPARING FORM NR-8 CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under <u>Cultivated Crops</u>, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

REFUGE GRAIN REPORT

(1)	On Hand	(3) RECEIVED	(4)		GRAIN D	(5) ISPOSED OF	^	(6) On Hand	Propose	(7) or Suitab	LE USE*
VARIETY*	BEGINNING OF PERIOD	DURING PERIOD	TOTAL	Transferred	Seeded	Fed	Total	END OF PERIOD	Seed	Feed	Surplus
Barley	300	540	840			150	150	690		690	
Wheat, winter	(10) Ind da	180	180	grain si es proposi		estination	of grain tr	180	th ou con-	180	
White-dutch clover	(9) Wh	8	1 refug 8: "H	eadquarte		etc.	-	8	8		
Timothy	(8) Neg	31	31	eropa. r ahippin		ving.	-	31	31		
	(a) apris	is a prope	sed breuk-d	ones pà As		ram lister		6. Indicate	if grain is		
	1 20 10	man ox cosm ump 4 less s	ans 2 and 3. coloren f.								
	P		food patch	ming per		nomicse)		der, since e	olyong, or		
		il not suff her refuge	e, as specifi			y in cons	dering trans d other seeds	fer of seed will be liste	supplies to		
	(1) Isl	each type durid corn, llo, new er	of grain seg garnet whea a cowpeas, n	red May			com, yellow apring when sting as con	dent corn, t, preso mili	quarranea: st, combine 1 soybeans		
80 80		ronadered 50 lb., rys lacomput	equivident -55 lb, oat ang volume	8-80 16		shelled) — - no lb . n the entite	55 lbs, corn file 50 lbs contents (cu	compose compose (i) by 0.84	. whea!	*	

(8) Indicate shipping or collection points Northern Pacific R.R. depo	t, Stevensville
---	-----------------

⁽⁹⁾ Grain is stored at Headquarters granaries -- work center and Q-2 area.

⁽¹⁰⁾ Remarks Barley and wheat used for banding and emergency feeding.

^{*}See instructions on back.

Thmo thy

White-dutch clover

wheat, winter

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.

tweer need for sending and emergency feeding.

- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

TIMBER REMOVAL

Refuge	Ravalli	Year	195.69.

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
NONE						, i		

Total acreage cut over	Total income
CordsTies	Method of slash disposal

Refuge

Ravalli

Proposal Number Reporting Year 1969

ANNUAL REPORT OF PESTICIDE APPLICATION

	INSTRUCTIO	NS: Wildlife Refuges Ma	nual, secs. 3252d, 3394b and	3395.					
	Date(s) of Application	List of Target Pest(s)	Location Total of Area Acres Treated Treated		Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	Early June	Broadleaf annuals: Mustard Canada thistle Scotch	Agricultural lands- tracts 10, 11, 19, 20, 21	163	2,4-D, PGBEE	կկ lbs./A. (ll gal.@կ#/A)	.25 lbs./A.	Water 10 gal∕ A	Tractor with boom spray
(2)	June 1-10	Knapweed Thistles	Dikes & roads, patchessouth refuge area	8.6	2,4-D, DMS	24 lbs./A. (6 gal.@4/A.)	2.8 lbs./A.	Water 20 gal/A	County spray- truck, hand nozzle
(3)	June 11 & 13	Knapweed Thistles	Pasture- G-19 tract 19 W.	28	2,4,D, DMS	84 lbs./A. (21 gal.@4#/A.)	3 lbs./A.	Water 20 gal/A	BRI

10. Summary of results (continue on reverse side, if necessary)

^{(1) 95-100%} kill on prime target (annual mustard); slowed growth of thistles but very little kill resulted (3# rate needed for thistle control).

⁽²⁾ Estimate 60-75% kill. Heavy density of some thistle patches along dikes prevents complete coverage of all plants. Repeated sprayings needed to eventually control infestations.

⁽³⁾ Grassland sprayed at expense of Forest Service. Spot treatment of remaining patches from previous control efforts on 80 acres of grassland was 50-75% successful. Each year of spraying reduces pest plants and improves grass cover.

Refuge Ravalli Months of September to December, 19 69

										Form NR-2 - UPLAND GA
(1) • Species	(2) Density	(3) Young Produced		(4) Sex Ratio	Re	(5) emoval	ls	(6) Total	(7) Remarks	
Common Name	5 200	Acres per Bird	Number broods obs'v'd.	Total	Percentage	Hunting	For Restocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
fautos n	agriculture-	ted in submitt le area	ulture le list gures s e sampl	ruo: ric mbo. Fi Fi	repeated type and typ	Sta whe nts	Cov ardwo etc. used d cou	ypes, n but and h rie, ld be ns an	teres of colors of the colors	Population low and no State releases made on refuge. Observations most frequent in south Tract 21 and west portions of Tracts 10, 11 and 20.
Jungarian (Gray) partridge	Grass & agriculture 600 acres	cheasan	rkey, p	wā l	ng habitat. urily to will le.	eedi prim ilab	ve br lies f ave	ntati n app ies i	in represe This column other spec	Single flock of 13 observed along Co. road along west boundary of Tract 11. Periodic use of refuge made by birds moving down from foothills.
	the report period.	during	bevore	a K.	each categor	ni 1	edaun	otal	Indicate t	(5) REMOVALE:
ay n seasons,	port period. This m refuge during certai	the re	during ing int	ge (rat	sing the ref lus those mig	er u	dmun n.kd d	total siden	Estimated include re	(6) TOTAL:
	covered in survey.				stermine po					(7) REMARKS:
			b	US G	ed blucds be	1970	boł	rad a	ij oj eldac	tigqs enmulos vino *
						-				

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES:

Use correct common name.

(2) Densit

Specie

(2) DENSITY:

Pertinent information not specifically requested. List introductions here.

Population low and no State releases made on refuge. Observations most frequent in south fract 21 and west pertions of fracts 10, 11 and 20.

YOUNG PRODUCED:

boundary of Tract IL.

- - (5) REMOVALS:
 - (6) TOTAL:
 - (7) REMARKS:

Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce

grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

Estimated number of young produced, based upon observations and actual counts: 0) as in representative breeding habitat.

swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short assessed

This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

Indicate total number in each category removed during the report period.

Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

^{*} Only columns applicable to the period covered should be used.

Refuge Ravalli

Calendar Year 1969

(1) Species	(2) Density	(3) Young Froduced		() Rem		ntzn Ls			(5) Bses	In	(6) troductions	(7) Estima Total R Popula	efuge	(g) Sex Ratio
	Cover types, total Acreage of Habitat	Number	Hunting	stocking	Sold	For Research	Predation	Disease	Winter	Number	Source	At period of Greatest use	As of Dec.	
	Brush, timber, grass & agricultural (1700 acres)	to 8 me vivo Lucit ni hutel nin hetti	. 2	ose cin cin co co co co co co co co co co co co co	to t	cover but : typ: typ: T. T.	1	poa.	l kill ched	lgu le d fe bi	tenge avanta sab ett tal sab ett tal pure sente triang sent triang sent triang sent to ettes to ette to ett	25	20	1M/3F
	lage.								= 1		CED: Zatim	POUNG PROIS	(E) (#)	
n)	sassal lator eracibul seras			70	n be		EEW!	nai		ad s	da ao	188883	(6)	
	which atook was accured.	may from	138	TO I	130	d rec	7,8	redi	no ed	021	VS: India	O I TOU O A THE		
23	on the refuge at period of i	gafoaca -It.	1283 198						entie Sundai			POTAL RESUG POPULATION:	(7)	
drom	sach species as determined	o relemel	bas	88	lam da r	lo of)85. 10	100	eq ed.	e sin	olbsI field	:DITAR X20	(a)	

Three sets of twin fawns raised on refuge.

Known losses include two road kills and one poached on East Side Highway, east of Tract 27.

Reported by H. A. Lipke

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisians white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
 - (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

Reported by II. A. Lipice

- (4) REMCVALS: Indicate total number in each category removed during the year.
- (5) LCSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE
 POPULATION: Give the estimated population of each species on the refuge at period of its
 greatest abundance and also as of Dec. 31.
- (8) SEX RATIC: Indicate the percentage of males and females of each species as determined from field observations or through removals.

Chown Losson include our real fills and one poscince on Cast Side Highway, east to the Losson Month

.angler no beging theme this earne count

WATERFOWL HUNTER KILL SURVEY

Refuge Ravalli

Year 196 9

			SUOTIONIERI					
₹ (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Weeks of	No. Hunters	Hunter	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Total	Crippling	Total	Est. No.	Est. Total
Hunting	Checked	Hours	Waterfowl Species and Nos. of Each Bagged	Bagged		Kill	of Hunters	Kill
			w the same pattern.	es folle	essive wee	r. Suce	JaI.	
10/4-10	109	404	Mallard 88, G. W. teal 36, Unknown teal	233	36	269		
		end to r		minim s	to survey	goal is	(2) The	
	ed blu	etion she	B. W. teal 12, Widgeon 7, Pintail 5,	eved or	w esoult mor		đsb	
		proport	Scaup 4, H. merganser 3, C. merganser 2,	tay of t	uring each			
	er care	particul	Gadwall 2, Redhead 2, Ruddy 1, Unknown 1		eque Jiolle		edi	
		4	resentative data.		ken to col		sho	
10/11-17	55	158	Mallard 18, Unknown teal 6, Widgeon 5,	38	edmun Istor	孙	(3) Rec	
			G. W. teal 5, Scaup 1, Shoveler 2,	BOOK NO.	Dennis Trans	SHAN AND	work (C)	
	ard (61);	CISM :V	H. merganser 1	in decr	wl species	lusterf	(h) Lis	
10/18-24	30	85	Mallard 15, G. W. teal 11, Widgeon 3,	37	Refread	de 148 ha	Pin	
10/10-24	50	05	Canvasback 2, Shoveler 2, Gadwall 1,	31	(1).	Leel be	niw	
			Unknown teal 1. Wood 1. Merganser 1					
			Live Dagged Live	rateri	numbers o	erd total	(5) Rec	
10/25-31	55	199	Mallard 21, Widgeon 10, G. W. teal 8,	64	o areomm	77	(6) Rec	
	1		Scaup 8, Gadwall 5, Shoveler 3, Canvas-	E10JEW	. munders o	EJOJ DI	iosa (o)	
			back 2, Bufflehead 2, Unknown teal 2,	- 6-	nums 5 and	toO to E	(7) Total	
			Pintail 2, B. W. teal 1		Daniel C Strains			
	40 1601	reeken inc	unters who hapted on the return darling the	ier, of	mm [8 to)	56	(8) Est	
11/1-7	40	181	Mallard 22, Unknown 9, Scaup 4, Shoveler	40	ked (Colum	90 70	aud	
	= "		4, Widgeon 2, Gadwall 2, Goldeneye 2,					
			Unknown teal 2, Pintail 1	100 I	projected	sample.	(8) KII	
11/8-14	51	145	Mallard 14, Widgeon 3, Scaup 3, Unknown	25	3	28		
111/0-14	7.	147	teal 2, Pintail 2, G. W. teal 1					
7 -								
11/15-21	43	126	Mallard 27, G. W. teal 3, Scaup 3,	41	12	53		
			Goldeneye 2, Pintail 2, Gadwall 1, Red-					
			head 1, Bufflehead 1, Unknown teal 1					
					-4			
-			\$					
	0348-60	8						
_			(over)					1000
1			and the second s	1				

Year 196 9

LLEVER

Refuge

INSTRUCTIONS

					INSTRUCTIONS			
(9) Est. Total	No.	(7) (8 Total Est.	(6) Crippling	(5) Total	(11)	(3) Hunter	(2) No. Hunters	(1) Weeks of
K411	(1)	The first w	reek of hunt	ing begi	ins with opening day and ends at the close	of huntin	g 6 days	Hunting
	(2)	The goal is	to survey	a minimu	ow the same pattern. Associated the same pattern. In of 25 percent of refuge hunters each we	ek and to		10/1-10
		collected d the hunter should be t	luring each effort expe aken to col	day of t nded. W lect rep	completed their day's hunting. This info the week and in each area hunted in relat- when the 25 percent goal cannot be achieve presentative data.	ive proported, particu	ion to lar care	
	(3)	Record the	total numbe	r of hou	ers the hunters spent hunting on the refu	.e.	55	LT-TT/OT
	(4)	Pintail (36 winged Teal	Redhead (1).	(16), Ga	reasing order of numbers bagged. Sample adwall (11), Widgeon (6), Coot (4), Canada	Goose (3)		10/18-21
	(5)	Record tota	l numbers o	f waterf	owl bagged. Mergansed, Lest nword	no		
	(6)	2.9	1 61	1 42	owl_reported knocked down but not recover	ed.	55	10/25-31
	(7)	Total of Co	lumns 5 and	6.	ck 2, Bufflehead 2, Unknown tesl 2, ntail 2, B. W. teal 1			
		hunters che	cked (Colum	n 2).	unters who hunted on the refuge during the	eti . Loz.	cluding	11/1-7
	(9)	Kill sample	projected	to 100 p	percent. Column 9 = Column 8 x Column 7.	Un		
		28	3	25	Llard 14, Widgeon 3, Scaup 3, Unknown al 2, Fintail 2, G. W. teal 1	145 Ma	R	11/8-11t
		53	21		Llard 27, G. W. teal 3, Scaup 3, Ldeneye 2, Pintail 2, Gadwall 1, Red- ad 1, Bufflehead 1, Unknown teal 1	Go	113	12-21
							30348-60	
					(TOVO)			

WATERFOWL HUNTER KILL SURVEY

Page 2

Refuge Ravalli

Year 1969

			INSTRUCTIONS					
(1) Weeks of	(2) No. Hunters	(3) Hunter	(14)	(5) Total	(6) Crippling	(7) Total	(8) Est. No.	(9) Est. Total
Hunting	Checked	Hours	Waterfowl Species and Nos. of Each Bagged	Bagged	Loss	Kill	of Hunters	Kill
11/22-28		90 g of bas	Mallard 12, G. W. teal 2, Unknown teal 1, Scaup 1, Widgeon 1, C. merganser 1, H. merganser 1	to have	om those w	24 si isog n yino	(2) The	
11/29-12/			Mallard 24, Scaup 2, Unknown teal 1, Widgeon 1	28	egge 4troffs	32	the	
12/6-12	42 (1d) bra	189	Mallard 50, Unknown teal 5, Pintail 3, Widgeon 2, Scaup 1, G. W. teal 1, Unknown					
	Green-	(3)	dwall (11), Widgeon (6), Coot (4), Canada G	16), Ga	Rednead		Pin	
12/13-19	38	113	Mallard 15, Pintail 1, Unknown teal 1	17	3 -(1)	20	nlw	
12/20-26	49	158	Mallard 20, Goldeneye 2		o augimum .	27	(5) Rec	
12/27 & 28	24	34	Mallard 7, Pintail 2	9	o salidoon.		(6) Rece	
TOTALS	595	1953		644	130 (min- imum, 20.2%)	774	1410	1150
	30.000	OUL LESS	Breakdown for 633 reported known species:	2).	ked (Column	ers che	inuri	
		46-	Mallard 333 52.4 Goldeneye 7 G.W. teal) H.merganser 5 Teal (unk.)) 126 19.6 C.merganser 4 Canvasback 4 Widgeon 34 5.2 Redhead 3 Scaup 27 4.2 Bufflehead 3 Shoveler 26 4.1 Ruddy 1 Pintail 18 Unknown 11 Ring-necked 17		projected	sample	11x (6)	
	0348-60	8	Wood duck 14 Coot 21 Gadwall 11 Snipe 4	Canad Snow	a geese 5 geese 1			
			(over)					

Year 1969

3-1750c Form NR-1C (Sept. 1960)

Refuge Ravelli

INSTRUCTIONS

					INSTRUCTION	NS .				
(6)	(8	(7)	(9)	(2)		(11)		(8)	(2)	(1)
Est. Tota	. No.		Crippling	IsjoT h	on Pook Borne	pall has sala	Waterstow Spec		No. Hunters	Weeks of Hunting
TITA	(1)				with opening d		at the close o	f huntin	g 6 days	giratina
		later. Su	ccessive wee	KS TOTTOM	the same pattern	. W. teal 2.	Mallard 12, G	90	28	11/22-28
	(2)			a minimum	of 25 percent of	f refuge hun	ters each week	and to		
T. Hardy		data only	from those w	ho have co	mpleted their da	ay's hunting.	This inform	ation sho	ould be	1
					week and in each the 25 percent					11/29-12/5
					sentative data.		L de acimered,	parioccu	rar care	0/24-62/44
	(3)				the hunters spe				112	21-9/21
	(4)	Pintail (3	6), Redhead	(16), Gadw	sing order of mall (11), Widge	on (6), Coot	(4), Canada G	oose (3)	, Green-	
		winged Tea	1 (1). 8	7.7	known teal L	inteil l, Un	Mallard 15, P	113	38	12/13-19
	(5)	Record tot	al numbers o	f waterfow	l bagged.	oldeneye 2	Mallard 20, G	158	61	12/20-26
	(6)	Record tot	al numbers o	f waterfow	l reported knock	ced down but	not recovered	34	24	L2/27 & 28
1150	(7)	Total of C	olumns 5 and	6.				1953	565	TOTALS
			imum, 20,25)	paper						
	(8)		he total num ecked (Colum		ters who hunted			week, in	cluding	
	(9)	Kill sampl	e projected	to 100 per	cent. Column 9	= Column 8 Column 2	k Column 7.			
		į.			H.merganser	126 19.6	G.W. feal) Teal (unk.))			
		-		143	Canvasback	0.47 027	B.W. teal			
		RESIDENCE		3	Redhead	34 5.2	Widgeon			
				3	Bufflehead	27 4.2	Seaup	1000	1	*
			l l	T	Ruddy	26 4.1	Shoveler			
		-		I.	Unknown	1.8	Pinteil			
		- KOSSIN			,	17	Ring-necked. Wood duck			
			geese 5	word L	Goot 2	11.	Gadwall	3	30348-60	
		COCCUS COCUS COCCUS COCUS COCCUS COCU								
		8		1	(mayo)					

Form NR-1A	(9)			IGRATORY B			(2)	(1)	
Nov. 1945)				r than wat			thru	2.00	
Ref	uge Ravalli			Months	of Septem	mber	Decem	ber 195.69 bas	
				-		4	1	ng dove	
(1)	(2			3)	(4			winged dove xpdpx	
Species	First	Seen	Peak Nu	umbers	Last	Seen		adoctéaac	Total
A 1 2 2 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		- 005				1		Letonoxxx#cxpata1	Estimate
Common Name	Number	Date	Number	Date	Number	Date	Cottonoverx	Vestacxx xxvounce	
T = 1 11 1				ate Dec.		12/29	1	eagle	
I. Water and Marsh		despe	F 50+2	I Taba Oat		Late Dec.	Few Today	con Short-eared	
Great blue hero			30	Late Oct	200		(19 counted	10/25; wintering	
Eared grebe	The second secon	period.		sent.				30/700	Few
Pied billed gre		period.		Early Oct			(13 counted	, 10/10)	200
Red-necked greb	e l	10/10	Few	Oct.	Few1	10/10	From last		wor Few
Western grebe	ntering)	ate Dec.	5	10/10	Few	11/3	61 61		HersM 5
		E 21		Sept.	3-5		81 11	-legged hawk	760
				Sept.	Several	11	30 30	dran Bells	
		12/27	I	Dec.	l or 2	12/27		Amen w	
		1-1-2	-	Dec.	a 10 T		1 1	Meta i	
			ŧ.	11/9-18	1-3	Dec.	-	e's hawk	
avir	by Howard A. Li	2/2	7	arly Sept	C=T		From last	son's hask vulture	
	man san man man yo	per loday		14			1002	2700 701	DALTH T
				SHOITS	URTEMI				
	931 Edition, and 1	I , Jailad	.O.U. Che	in the A	as found	seasa for	se the corr	pecies: U	(1)
I. Shorebirds, Gull		I .ote .	"tern"	[[makaa"					1.00
					terms as	Issanes H	LOVA TABO	0	
Terns:		JTOGGT BI			terms as		rder. Avoi	4	_
Terns:	ing period should		during t	on refuge	pourring	species o	orn, other	1	
Terns: Killdeer	Issel to From las	period	200	eguler no	gairring 11 a Stent	12/27	(Wintering)	
Terns: Killdeer Wilson's snipe	figure 10 From las	period	200	Oct.	galtruot tas 2 s la taw 1 I	12/27	orn, other)	
Terns: Killdeer Wilson's snipe Greater yellowl	face to From last to the control of	period	200 200 Several	Oct. Mid Oct. Oct.	partuod tas 2 s Is tsw 1 I od2 1 II	12/27 12/28 11/18	(Wintering)	
Terns: Killdeer Wilson's snipe Greater yellowl Dowitcher	From last of the second	period 10/12	200 200 Several 10-20	Oct. Mid Oct. Oct. Early Oct.	galiland tag 2 a la tag 1 l odt 1 l l	12/27	(Wintering)	
Terns: Killdeer Wilson's snipe Greater yellowl Dowitcher Sandpipers	From las egs som 8	10/12 ies repres	200 200 Several 10-20 sented in	Oct. Mid Oct. Oct.	no 2 a la sala	12/27 12/28 11/18 Mid Oct.	(Wintering)	
Terns: Killdeer Wilson's snipe Greater yellowl Dowitcher Sandpipers Sora rail	egs semi Two spect	10/12 ies repres	200 200 Several 10-20 sented in Few	Oct. Mid Oct. Oct. Early Oct. small num	no 2 a la sala	12/27 12/28 11/18 Mid Oct.	(Wintering) d 10/10)	
Terns: Killdeer Wilson's snipe Greater yellowl Dowitcher Sandpipers Sora rail Forster's tern	egs Two spectors from last	10/12 ies repres t period 9/15	200 200 Several 10-20 sented in Few Few	Oct. Mid Oct. Oct. Early Oct. small num	2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12/27 12/28 11/18 Mid Oct.	(Wintering) d 10/10)	(3) 10
Terns: Killdeer Wilson's snipe Greater yellowl Dowitcher Sandpipers Sora rail	From last to the second	10/12 ies represt period 9/15 9/15	200 200 Several 10-20 sented in Few Few 1-3	Oct. Mid Oct. Oct. Early Oct. small num Sept. Sept.	the 2 s is the 1 is one 1 is o	12/27 12/28 11/18 Mid Oct. 12/21 9/15 12/28	(Wintering (22 courte) d 10/10)	10
Terns: Killdeer Wilson's snipe Greater yellowl Dowitcher Sandpipers Sora rail Forster's tern	egs Two spectors from last	10/12 ies represt period 9/15 9/15	200 200 Several 10-20 sented in Few Few 1-3	Oct. Mid Oct. Oct. Early Oct. small num Sept. Sept.	the 2 s is the 1 is one 1 is o	12/27 12/28 11/18 Mid Oct. 12/21 9/15 12/28	(Wintering (22 courte) d 10/10)	10
Terns: Killdeer Wilson's snipe Greater yellowl Dowitcher Sandpipers Sora rail Forster's tern	egs semical from last and the semical semical from last and the semica	10/12 ies represt period 9/15 9/15	200 200 Several 10-20 Sented in Few Few 1-3	Oct. Mid Oct. Oct. Early Oct. small num Sept. Sept.	Januaros Jan 2 s Is Jaw 1 I ond 1 II vod III nbers II 1 dd 1 1 by 1	12/27 12/28 11/18 Mid Oct. 12/21 9/15 12/28	(Wintering (22 courte	(DI\OI b	10
Terns: Killdeer Wilson's snipe Greater yellowl Dowitcher Sandpipers Sora rail Forster's tern	egs semical from last and the semical semical from last and the semica	10/12 ies represt period 9/15 9/15	200 200 Several 10-20 Sented in Few Few 1-3	Oct. Mid Oct. Oct. Early Oct. small num Sept. Sept.	Januaros Jan 2 s Is Jaw 1 I ond 1 II vod III nbers II 1 dd 1 1 by 1	12/27 12/28 11/18 Mid Oct. 12/21 9/15 12/28	(Wintering (22 courte	(DI\OI b	10
Terns: Killdeer Wilson's snipe Greater yellowl Dowitcher Sandpipers Sora rail Forster's tern Ring-billed gul	egs semical from last and the semical semical from last and the semica	10/12 ies represt period 9/15 9/15	200 200 Several 10-20 sented in Few Few 1-3	Mid Oct. Oct. Oct. Early Oct. small num Sept. Sept.	Jarranos Jar	12/27 12/28 11/18 Mid Oct. 12/21 9/15 12/28	Wintering (22 courte	(pl\of b	10 (Σ)

(1)	(2)	sot:	RATORY 16	OTM (4)		(5)		Ar_9(6)
	taxa.			than wate	(other					(Nov. 1945
III. Doves and Pigeons: Tedal	From last	period	150-200	Sept.			ELLE	vei Rav	Ref	
Mourning dove										
White-winged dove			(4)		ε) -		S)		(1)	
IstoT Total	v6c	бееп	Last	bers	Peak Nu	Seen	First		selbed	
honodcylocomod Estimated	khapedeald:	_								
IV. Predaceous Birds Osprey	From last		1-4imil	Sept.	Number	10/4	Number		nmon Name	CO
Golden eagle	_1	12/29		Late Dec.						
buckxbank Short-eared		Late Dec	. Few		0.177			Birds:	and Marsh	I. Water
Horned owl July 25 \OL b			000	.dop edel		resent	From last	1 1	alue hero	dasaro
Magpie	From last	period	200	Nov.		Wintering		1	edet	Dezse
	(13 enunts		5-10	. Dec.	STITI I	resent (w	intering)	90	illed gre	Fied b
Crow	From last		Few	Sept.	2	12/27 (sked greb	
Marsh hawk	10 10	fi/TT	10-15	Dec.or	-	The same of the same	intering)		n grebe	Vester
Rough-legged hawk	12 12	18	Few 3-5	Cont	-	Late Dec.				
Red tailed hawk	12 12	II.	Several	Sept.			1	4 /		
Sparrow hawk	7	12/27	l or 2	Dec.	7	12/27		fy -		
Pigeon hawk	7	Dec.	1 01 2	Dec.	_	12/21				
Cooper's hawk Swainson's hawk	1	11/9	1-3	11/9-18			-			
	From last			Early Ser	7	2/2	by How	T A T	mleo	
Turkey vulture	From Last	herrog	1	marry pet	0. /	Reported	by How	ara A. Li	грке	

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)

II. Shorebirds, Gulls and Terns (Charadriiformes)

. Job bim III. Doves and Pigeons - (Columbiformes)

Downiecher IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous From Last period Passeriformes) Well

Forster's term

ilra bellid-anim

(2) First Seen: The first refuge record for the species for the season concerned. .Just 1-3

12/21

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

The last refuge record for the species during the season concerned. (4)Last Seen:

Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned. 3-1750 Form NR-1 (Rev. March 1953)

WATERFOWL

	Dec.29	Jan. 5	Weeks	1/19 of r	1/20 (2) eport	2/2 ing p	eriod	2/16	2/23	3/2
(1) Species	1	: 2	: 3	: 4	: 5	: 6	7	_	: 9	: 10
vans:	1			1					1	
Whistling		a de la des	71	100						
Trumpeter				3.4						
eese:										
Canada	170	14	24	20	20	h2	1,2	53	40	40
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other TOTALS	110	Th	11	20	20	N.	42	53	10	10
acks:					V 4 1 1 1	Carlo La Til				
Mallard	b-000	2,300	2,300	2,000	2,000	3,500	1_500	1,500	1,200	1 200
Black										
Gadwall	200	Te e	[0 0]				50	30	50	Ti o
Baldpate	100	200	200	100	160	1100	100	50	50	
Pintail	100	599	50	73	50	50	50	50	50 25	
Green-winged teal	300		1(00)	25	25	3	25	25	25	
Blue-winged teal					100					
Cinnamon teal										
Shoveler		50	50							
Wood	10									
Redhead							50	50	50	~ 0
Ring-necked										50
Canvasback			-		-		50	10	(0)	
Scaup							25	25	25	
Goldeneye		+					25	25	25	
Bufflehead		5		250			25	25	25	
Ruddy										
SANSE C. BETTERNOT		10		EVEN CO.	5	10	20	(8)	10	
Hooded merganser	-		-	-	-	-			5	AU
TOTALS	5,010	2.715	2,000	2.386	2,100	1,685	1,940	1,820	1,525	W.Y.
3,38,38,38	200	280	200	2,185	200	60	50	50	50	1,63%

3 -1750a

Cont. NR-1 (Rev. March 1953)

WATERFOWL (Continuation Sheet)

) Total Production	it A sv	Weeks	3/23 s o f	3/30 (2 repor		peri	od	:	(3) Estimated	: (4) : Product	ion
(1) : Species :	11 ^{[[830]}		91 13 ME	eriM1 pr	15	160	urial any	18	waterfowl days use	:Broods:E : seen :	
Vans: Whistling Trumpeter	λ 81	mmary of	data 3 ree	ord 45 wad	EZ 318	42	28		1,799		
ese:	pr.94	ding hab	tet. Es	timates h	aving no	basis in	feat sho	nld be on	Sthod.		
Canada	1197.00	ding offre	330	d c80 rbs	shows b	ma 80 on	PH 2001-11	ore areas	7,119	E of the	-
Cackling	Est	mated nu	sper of w	oune brod	uced base	d on obs	rvations	and acts	al counts on r	To The Re In the	attva
Brant White-fronted	YAGI	tage week	A bobars	CLORS X R	murger or	GRAS bie	MOUS TOL	mach apec	Tes'	+	
Snow	OMT			70	115	90			1,925		
Blue										+	
ther Ross	: Est	mated av	stage rel	nge20 bay	20	30			490		
ks: Forals	112	90	110	170	215	200	70		9,534		
fallard	1,100	2,000	¢,200	h_000	1,000	3,000	3,000		294,700		
Black	00	hose spe	Tag of 1	ocal and	national	Signifie	DC8			-	
Gadwall	50000	100	300	200	200	200	500	Special	日本の日本のアンドログ の日本語では、100mm		AON
Baldpate	3.00	19971000	1,000	1,000	2,000	800	500			Lig the	
intail Freen-winged teal	300	300	800	600	600	500	h00		28,070 18,200		
Blue-winged teal	THE TOO LI	01/220000	Sec. 200 (5	31 300 0118	1000	50	100	teld Men	1,050	+	
Cinnamon teal		-	-			10	50		120	+	
Shoveler 3	EMICEO	eth.	200	300	300	100	200		11,200	+	
lood				6	H030	eg 50	0.500 D	Van, Kei	Se Wel.932	-	
Redhead	ජා	75	200	200	100	100	100		6,475	+	
Ring-necked	25	30002E :	rin.	50	යා	25	25		1,925		
Canvasback	30	30 :	50	50	3.00	200	25 50		49410		
Scanb 1136,177	: 30	3.can30 :	50	50	100	be100	TDE 150 0 TS	\$500 more	4,303		
joldeneve i	: 50	PARTORS :	3.00	1.00	200	50	50		(15ولا		
Bufflehead 353	25	25	en:	50	50	mg 50	50		2,905		
Ruday	1	1111	10			10	50		1020		
ther_c_marganser			15	50	1.7.7530	her when	ruR grass	KUITAT	area.	s, marsha	8
looded merganser	10	1.0	10	215	20	83	2.5 L. S				
Lotal Totals	2,220	2,995	0,365	6,884L 800	7,030 1,000	5,905	5,445 2,000	SUMMARI	1488416		

(5) Total Days Use	(6) (7) : Peak Number : Total Production	SUMMARY
Swans 1,799	112	Principal feeding areasEntire area. sloughs. marshes
Geese 9,534	112	and grain fields.
Ducks 436,177	8,325 5,200	Principal nesting areas
Coots 46,410	2,000	
CLASS C. INVEN	TORY	Reported by G. A. Devan, Refuge Manager
Green-winged teal IN Blue-winged teal	STRUCTIONS (See Secs. 7531 throug	h 7534, Wildlife Refuges Field Manual)
(1) Species:		d on form, other species occurring on refuge during the ed in appropriate spaces. Special attention should be given national significance.
(2) Weeks of Reporting Period:	Estimated average refuge popul	ations.
(3) Estimated Waterfow Days Use:		umber of days present for each species.
(4) Production:	breeding areas. Brood counts	uced based on observations and actual counts on representative should be made on two or more areas aggregating 10% of the aving no basis in fact should be omitted.
(5) Total Days Use:	A summary of data recorded und	er (3).
(6) Peak Number:	Maximum number of waterfowl pr	esent on refuge during any census of reporting period.
(7) Total Production:	A summary of data recorded und	et (f). Reflection : Estimated : Froduction

Interior Duplicating Section, Washington, D. C. (REAL NEED 1953)

WATERFOWL

(Continuation Sheat)

3 42750a

3-1750 Form NR-1 (Rev. March 1953)

WATERFOWL

:				_	(2)					
(3)	0.45=		Weeks	of r	eport	ingp	eriod			
(1) :	8/31-9/6:	9/7-13	9/14-20	9/21-27	9/28-10/4		: 10/12-18	10/19-25	:10/26-11/	1:11/2-8
Species :	1 :	2 1	3	: 4	: 5	: 6	: 7	: 8	: 9	: 10
Whistling				1					8	20
Trumpeter					-				-	- 20
Geese:							1			-
Canada				1			000	000	7.00	7.00
Cackling				3	9		90	90	100	100
Brant				-	-			-	+	
White-fronted						-			-	
Snow						-				
Blue				1	+		 		1	+
Other TOTAL				3	9		90	90	100	100
Ducks:							1	70	100	
Mallard	750	850	800	800	900	1,120	1.180	1,475	2.110	2.200
Black			- 000	000	755	21220	200			
Gadwall						20	30	30	80	60
Baldpate	200	220	220	200	595	660	600	540	480	350
Pintail	40	Го	60	70	40	45	85	110	175	150
Green-winged teal	75	125	125	180	205	125	105	75	105	150
Blue-winged teal	200	190	190	90	5	5	5		5	
Cinnamon teal	150	130	130	60	0					
Shoveler	90	100	120	90	50	15	15	15	20	20
Vood	130	130	130	100	80	45	30	15	15	1
Redhead	20	20	10	20	10	10	35	15	20	20
Ring-necked	35	35	35	55	55	25_	10	5	10	10
Canvasback							1			
Scaup				10	10	35	55	55	90	90
Goldeneye	15	10	10	10					15	
Bufflehead						1.5	30	15	15	1
Ruddy	10	40	40	50	10	45	45	25	40	1(
AtherH. merganser	30	30	30	20	10	20	20	20	20	20
TOTAL	1,775	1,920	1,900	1,755	2,000	2,196	2,246	2,395	3,200	3,150
Coot:	850	850	1,640	1,640	1,660	1,550	1,670	1,200	1,240	1

3 -1750a

Cont. NR-1 (Rev. March 1953)

WATERFOWL (Continuation Sheet)

(1) Species	11/9 - 15: 11 :	Weeks 11/16-22 12:	of 11/23-29 13	(2 repor 11/30-11/2: 14:	ting 12/7-13: 15:	peri 12/14-20:	l o d 12/21-27: 17:	12/28- <i>//3</i> : 18	(3) : Estimated : waterfowl : days use :		
Wans: Whistling Trumpeter	16	6	data rec	orded und	er (3).	_1			357		
eese:	PLES	idi ne hab	tat. Es	d Cocoos	SALING DO	000	000		7.00 5	e or e	10
Canada	105	125	125	130	205	220	280	200	12,474	Dresen	PERTAG
Cackiing	397	maded on	apar of 1	CHILD DOLCE	mond hoo	ed on obe	avirations	and ands	of consider on w	220000	tatiVa
Brant	VASI	SES MSEK	FA DODATE	CLONS X I	RESURES. OT	GWAS bie	Sent for	each spec	7		
White-fronted Snow	OMT										
Blue											
Gther TOTAL	105	125	125	130	205	220	281	200	12,481		
ucks:	105	167	165		205		201	200	12,001		
Mallard	2,200	2,300	2.400	2.600	2.500	3.635	4.290	3.250	247,520		
Black	40	posa ana	Hea of	000) 809	national	91 KD2 K2 G	1209	7,2,0	2411760		
Gadwall	60	20	35	30	20	20	20	20	3,115	d be a	Yen
Baldpate	300	300	200	165	165	1 इंड	70	70	38.430	ig the	
Pintail	150	75	150	70	70	70	70	50	10.640		
Green-winged teal	175	60	175	175	160	150	100	70	16,415		
Blue-winged teal	5								4,900		
Cinnamon teal									3,290		
Shoveler	20								3.885		
Wood	10				Repor	seg pl	Howard /	. Litnice.	4,900		
Redhead	20	10		-					1.470		
Ring-necked	10	.670 101	-	- 5			-	3	2,121		
Canvasback	207	51	0.0	1		1.0			56		13. 14
Scaup Goldeneys	125	10	20	- 10	10	10	5	5	3.780		
Bufflehead Town	5	10	25	15	5	5	5	10	945	ET GETTY	
Ruddy	15	59T 10	10 -	12	5	s ((and)	34.5			1240334	
xobber H. merganser	30 50	15		- -	11.5	10	10	2	3,171	til ocer	DET 3
A. merganser	70		5					20	35	an aral	
TOTAL	3,175	2,850	3,050	3,082	2,940	4,055	4,575	3,495	348,313		
Coot:	450	60	30	30	20	75-75	7,77	10	91, 220		

	(6) Peak Number:	Total Product	Lon Systo	, , , , , , , ,	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SUMMARY	94, 220		
Swans 357	20		Princ	ipal feed	ding area	s Pool 2	prior to	hunting	season.
eese 12,481	281	10 1	pool	s 8 and 3	10 after.	Light v	se of trac	t 20 gr	ain.
ucks 348,313	1.575	SO 1	Princ:	ipal nest	ting area	8	3,780		
oots 94.220	1.670		<u> </u>			1 3	y		
Shoveler Wood Redhead	20 .		Repor	ted by _	Howard	A. Lipke.	Refuge Ma	nager	
Bing-winged teal						1	3,290		
Green-winged teal II	NSTRUCTIONS (See	pace" 122T mi	LOURIT (2)74° I	ATTOTTLE	vernies .	Lield Wall	mar)		
l) Species:	reporting per	to the birds li	isted on formadded in app	propriate	spaces.				
l) Species:	reporting per		isted on formadded in app	propriate	spaces.			should	
 Species: Weeks of Reporting Period: 	reporting per to those spec	riod should be	isted on for added in appand national	propriate	spaces.	Special	attention	should	
2) Weeks of Reporting Period:	reporting per to those spec	riod should be cies of local a	isted on for added in appand national	propriate signific	spaces.	Special	attention	should	
 Species: Weeks of Reporting Period: 	reporting per to those spec Estimated ave	riod should be cies of local a	isted on for added in appand national opulations.	propriate signific	spaces.	Special	attention	should	
 Species: Weeks of Reporting Period: Estimated Waterford Days Use: 	reporting per to those special	riod should be cies of local a erage refuge po	isted on formadded in apparent national opulations. x number of produced base at should be	days pre	esent for servation two or	each special s	cies.	should	be giver
 Species: Weeks of Reporting Period: Estimated Waterfor Days Use: Production: 	Estimated average week Estimated numbreeding area breeding hab	riod should be cies of local a erage refuge poly populations mber of young pas. Brood cour	isted on for added in apparent national opulations. x number of produced base at should be shaving no	days pre	esent for servation two or	each special s	cies.	on repring 10%	be given
2) Weeks of Reporting Period: 3) Estimated Waterfor Days Use: 4) Production:	Estimated average week Estimated numbreeding are breeding hab	riod should be cies of local a crage refuge poly populations mber of young pas. Brood counitat. Estimate	isted on for added in apparent national opulations. x number of produced base its should be sea having no under (3).	days preed on observate or	esent for servation two or in fact sh	each special sand act more area ould be of	cies. ual counts s aggregat mitted.	should on repr ing 10%	esentatiof the

WATERFOWL (Continuation Sheet)

Interior Duplicating Section, Washington, D. C.

3 -1750#

3-1750b

UNITED STATES

of one page. This

3-1750b UNITED STATES

FORM NR-1B DEPARTMENT OF THE INTERIOR

(Rev. Nov. 1957) FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

the number of units r

(1) Area or Unit	PRETE TO GOTH	DADM M	Title	Refuge Manager				
	(2) Tebra Habitates		napitat practic	(3)	(4) Breeding	(5)		
Designation		creage	n other	Use-days	Population	Production		
STIMU LLE IC	Crops	200	Ducks	326,340	300	1,100		
bus dem perti	Upland	1,320	Geese	7,770	15	50		
Ltat types of	Marsh	700	Swans	119				
Hal report	Water	450	Coots	iani je	100	100		
heddimdus ed	Total	2,670	Total	Slab Privile	MG	1,550		
-ghaseb are		83 00 00						
	Crops		Ducks	0	enorg			
	Upland		Geese	MANDOW EVERT AND ADMINISTRATION OF A PARTY O		And Advanced Advanced		
alaeres as s	Marsh		Swans					
Larudiusings	Water		Coots		3			
dn Lying	Total		Total					
-dra Land	000000							
s noilib	Crops	SAUTES	Ducks	mos a ros som	merge			
Againdust &	Upland		Geese		37000			
se foods;	Marsh		Swans	A STATE OF THE STA	00013			
but not	Water	The Part Name of Street, or other Designation of Street, or ot	Coots	TL BESTORIO	HSCHOOL STATE			
ne rela-	Total		Total	0 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0				
	000 00 00 00 00 00 00	000 023 000		OS 60 CS G2 CD CD				
leep marsh;	Crops	ng wet	Ducks	ation type,	veget			
asers Teas	Upland		Geese					
-bnetxe bns	Marsh	-	Swans	GRAND TO THE REAL PROPERTY OF THE PERTY OF T				
to strictly	Water	Santa-machine and	Coots					
ow playa	Total		Total		-to do	***************************************		
eerst bres di	WINE SHIT ON							
abmuos as	Crops	er and	Ducks	s, open flow	Swamp			
cour types	Upland		Geese	-	0 1000			
possible	Marsh		Swans		Europe			
sented by	Water	-aldala	Coots	escuelez de	nord t			
-Lites ses	Total	DISCOUNT PROPERTY AND	Total					
e e e e e e		00 CD CD CD	00 ED CD 80	8 8 8 8 8	0 00 00 00 00 00	***		
	Crops		Ducks					
water fowl	Upland		Geese	OC boolesses more consumptions of		V		
ee with	Marsh		Swans					
	Water	CON SHOWARD	Coots	(82)-6-1-1	0	ACTION AND THE PARTY OF		
	Total		Total		na communicación descripción	1.5		
	continue to the top the top	en en en	CO 00 00 00	65 60 C3 60 63 6				
n of each	Crops	meerd.	Ducks	IJ IO GJEMLJ	LON: AN es	Popula		
	Upland	дисилизионрио	Geese		d dedentación de contracerdo			
	Marsch		Swans	CHOROLOGIC PART - CHARLES		(10.00000000000000000000000000000000000		
light age.	Water		Coots			J. Commission of the Commissio		
	Total		Total					

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

- (1) Area or Unit: A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.
- Crops include all cultivated croplands such as cereals (2) Habitat: and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.
- (3) Use-days: Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.
- (4) Breeding
 Population: An estimate of the total breeding population of each category of birds for each area or unit.
- (5) Production: Estimated total number of young raised to flight age.

3-1750 Form NR-1 (Rev. March 1953)

WATERFOWL

:					(2)					
(1) $\frac{i}{i}$	V451	5 577-10	Week 5/11-17	8 of 1	e p o r	6/2-7	:6/6-U	:6/15-21	Section	:6/39-7/
Species :	_	: 2	: 3	14	5	: 6	: 7	: 8	: 9	: 10
wans:		1	1	1	1	1	1	1	1	1
Whistling	21/2	3							1/2	
Trumpeter				1					The state of the s	
eese:										
Canada	60	60	10	10	10	30	30	30	140	60
Cackling										
Brant									1111111111111	
White-fronted										
Snow						The fall of				
Blue										
Cother TOTAL	60	60	40	40	10	30	30	30	10	60
acks:										
Mallard	3,000	2,000	1,000	1,000	1,000	1,000	1,000	1,000	800	700
Black										
Gadwall	200	200	100	30	50					
Baldpate	E 50	600	600	500	500	P00	200	200	خلاق	2.00
Pintail	2.45	200	100	50	50	70	50	50	33	40
Green-winged teal	200	720	150	150	100	50	50	50	50	50
Blue-winged teal	200	250	250	250	2-13	200	200	200	200	200
Cinnamon teal	200	350	Tion	200	550	300	200	العنط	250	750
Shoveler	200	200	(8.0)	300	200	100	50	الا	73	50
Wood	(a) a	150	50	50	20	50	50	50	50	85
Redhead	150	200	200	200	1(00)	100	50	50	1(0/0)	50
Ring-necked	50	50	1 1 1 1 1 1	50	20	20	. 30	30	50	50
Canvasback	50	50	50	50	50	50	50	50	20	20
Scaup	150	150	150	150	Loc	100	100	100	100	I A SHALL
Goldeneye	100	1.00	50	100		50	25	25	25	1 5
Bufflehead	50	50		(4)	25		25	25		
Ruddy	50	50	100	300	500	300	200	200	100	30
Other Com.merganser	15		20	30	10		10	10		
Hooded merganser	30	30	30	50	50	50	50	2	503	3 (8)
3073	5,545	4,750	3,450	3,920	3,453	2,520	2,340	2,340	1,995	1,660
oot:	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,000	1,500

Interior Duplicating Section, Washington, D. C.

WATERFOWL (Continuation Sheet)

THRU MONTHS OF 11/1/ 100 ARCHER . 1969 PAYALLE REFUGE (2) (3) (7) Total Productions Weeks reporting period Estimated : Production 7/13-19 9/20-26 :7/21-8/2:8/5-9 (1) Species CARLES CONTROL CONTROL :Broods:Estimated waterfowl 17 12 13 14 16 days use : seen : total 11 Swans: Whistling 119 Trumpeter Geese: Canada Cackling Brant White-fronted Snow Blue 80 150 408 COLUMN TOTAL 70 70 Ducks: 450 132,300 800 800 800 800 800 800 Mallard 800 800 Black 4,200 Gadwall. Baldpate 39.900 200 80 200 25 Pintail ha 10 MA bo bo bo Green-winged teal 10.850 40 50 100 100 100 50 50 3,50 Blue-winged teal 200 200 200 200 370 27,440 200 200 100 100 63,55U Cinnamon teal 100 100 100 100 1.00 100 OU 100 13,500 60 60 60 80 50 Shoveler 60 60 85 110 110 130 10,535 Wood 130 45 30 30 34 Redhead 30 LUgaryo Ring-necked 50 30 50 50 363 50 20 5,250 69 Canvasback 600 الالالوا 10700 Scaup Goldeneye 3,075 Bufflehead 575 60 60 60 60 40 Ruddy 50 70 50 other Com.mergenser 4.DEV 30 Hooded merganser 30 30 Total LOLY 488 1,700 Coot: (over)

T	(5)	(6) Peak Number:	(7) Total Production	SUMMARY
Swans	119	24		Principal feeding areas All peole, river orbest
Geese _	7,700	150	50	bestiest on pools 2, 5, 6, 8 and 10, and oxhows.
Ducks _	326,340	5,515	1,100	Principal nesting areas
Coots	21,8,500	2,500	100	26 20 50 87930 50 St 20 50 30 27530 26
Wood Redhead				Reported by Howard A. Lipke, Refere Kanney
Shovele	Remarks A.	antarni franciyasi	3 stace members 4	a inventories, production estimated.
(1) Spec	ies:	reporting per	iod should be adde	d on form, other species occurring on refuge during the ed in appropriate spaces. Special attention should be given national significance.
2) Week			200	GUA 200 300 100 100
Repo	rting Period:	Estimated ave	rage refuge popula	ations.
ALL THE	mated Waterfowl			
Days	Use:	Average weekl	y populations x nu	mber of days present for each species.
(4) Prod		breeding area	s. Brood counts s	aced based on observations and actual counts on representative should be made on two or more areas aggregating 10% of the wing no basis in fact should be omitted.
(5) Total	l Days Use:	A summary of	data recorded unde	er (3).
(6) Peak	Number:	Maximum numbe	r of waterfowl pre	sent on refuge during any census of reporting period.
7) Total	l Production:	A summary of	data recorded unde	or (f). g pariod : Estimated : Freduction

(Continuation Sheet)

Interior Duplicating Section, Washington, D. C.

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